THE BRICKBVILDER
AN ARCHITECTVRAL MONTHLY

VOLVME XXII DECEMBER 1913 NVMBER 12

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ARTHVR D. ROGERS, PRESIDENT AND TREASURER. RALPH REINHOLD, VICE-PRESIDENT AND BVSINESS MANAGER. RVSSELL F. WHITEHEAD, SECRETARY AND MANAGING EDITOR.

ENTERED AT THE BOSTON, MASS., POST OFFICE AS SECOND-CLASS MAIL MATTER. MARCH 12, 1892.

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MONASTERY OF ST. LUKE OF STIRIS, PHOCIS, GREECE.

Built near the beginning of the eleventh century, A. D. The irregular blocks are of marble from earlier buildings; others of tufa. The colonnettes are of cipollino and bigio antico. All the brick used is common thin red brick or tile set cornerwise on the string-courses and cornices. For the patterned frieze and panels of the smaller church the edges of bricks were splayed away in portions, and the brick were then bedded flush with the mortar, showing only the shaped face.

THE BRICKBVILDER

DECEMBER, 1913

VOLVME XXII. NVMBER 12.

The New York Central Railway Station at Rochester, New York.

CLAUDE BRAGDON, ARCHITECT.
New York Central Engineering Department, Associated.

THE new railway station at Rochester occupies a triangular site one block east of the old station and fronts, as that did, on Central avenue. It is flanked on the west by Clinton avenue and on the east by Joseph avenue. The main waiting room occupies the center of the front and the expression of which on the exterior gives the building its chief architectural feature. The façade terminates at either end in wings containing three stories of offices. On the north, adjoining the tracks, is an extensive service wing accommodating the baggage, mail, and express departments.

A traveler entering the station from the principal approach finds himself on a platform six feet above the waiting room floor, to which broad and easy stairs descend at right and left. Directly opposite him are the doors which give access to the concourse and subway leading to the trains. On a balcony above these doors is the train bulletin, from which the arrival and departure of trains are easily seen by passengers in the waiting room. The ticket office is located at the east end of the waiting room and the dining and lunch room is at the west end. The men's rooms occupy the southwest and the women's rooms the southeast angles. Baggage checking, parcel checking, news, telegraph, and other similar departments are conveniently and accessibly located on the ground floor, as shown on the accompanying plans, while the station master, the station police, and the barber shop are in a mezzanine, one short flight up.

DETAIL OF MARQUISE.

CENTRAL AVENUE FRONT, ROCHESTER STATION.

Beyond the waiting room is the concourse, lighted from a large skylight above, and beyond this, in turn, a subway 30 feet wide and 280 feet long, from which stairways ascend to the twelve tracks. This subway is well lighted and heated and contains comfortable seats. It is, in point of fact, as much a waiting room as a thoroughfare.

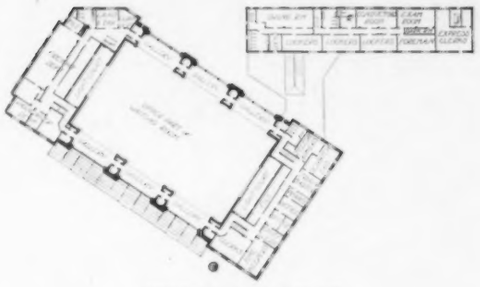
The architecture of the exterior is of a dignified type. The color, derived from the brown stone and purple hued brick of which the building is constructed, although rich in effect, is restrained.

By reason of the railway having become the all but universal highway between cities, the railway station has become the city portal. This fact finds its architectural expression in the present instance in the three great arches, reminiscent not alone of the ancient city gate, but of the viaduct, and even — by a stretch of the imagination — the driving wheels of a locomotive. This effect has only been achieved by the rigid elimination of ornament and the insistence upon mass and proportion. While the building as a whole shows no departure from the classic tradition, any single detail which would tie it to one of the so-called "styles" has been omitted. This has been done on the theory that to employ any architectural ornament which antedated the railway

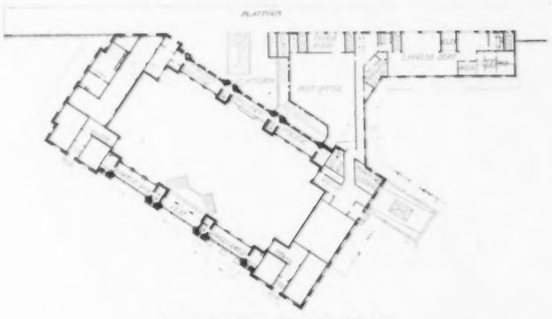
itself would be an anachronism. Save for the sculptured figures above the central portal and the ornamental iron work of the marquise, the front might pass for a work of engineering.

The main waiting room is one of the largest in the country. It is 60 feet high, 187 feet long, and 116 feet wide, from window to window. It contains seats for five hundred people, in addition to ample aisles and open spaces for moving and standing.

In the design of the waiting room, the architect has permitted himself a greater license than upon the exterior, particularly in the matter of color and ornament. He has, however, kept consistently in mind that decoration should emphasize form, and the distinguishing feature of the architecture of this room consists in the fact that though very much "decorated," the decoration is itself the construction. That is to say, the decoration is part and parcel of those permanent materials of which the floor, walls, and ceiling are constructed — not a superficial finish afterwards applied.



SECOND FLOOR PLAN.

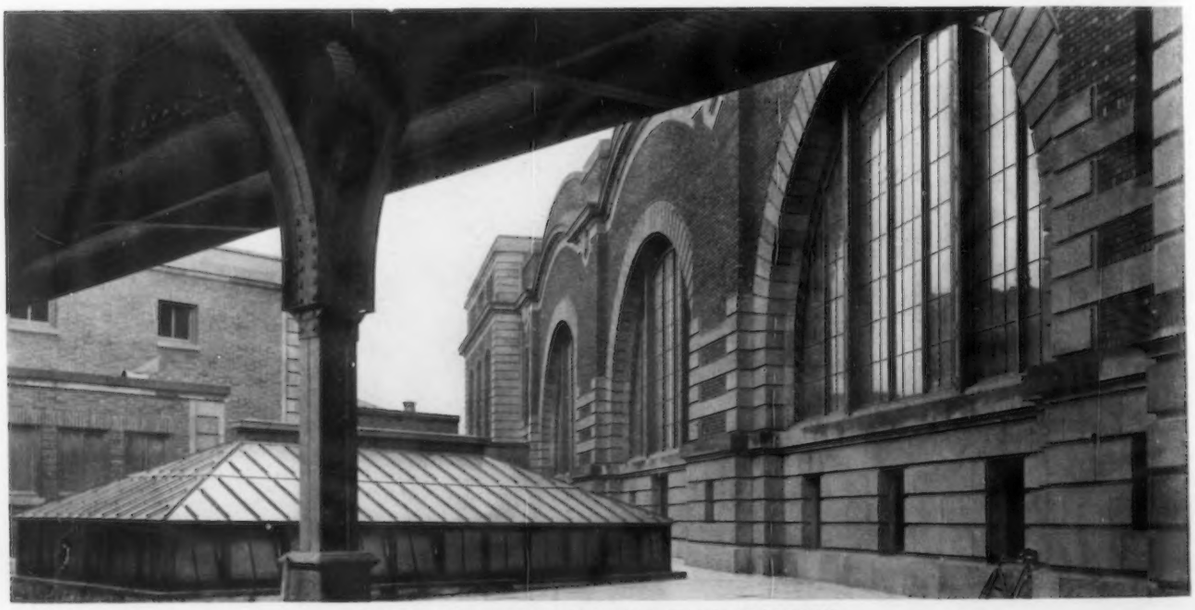


MEZZANINE FLOOR PLAN.

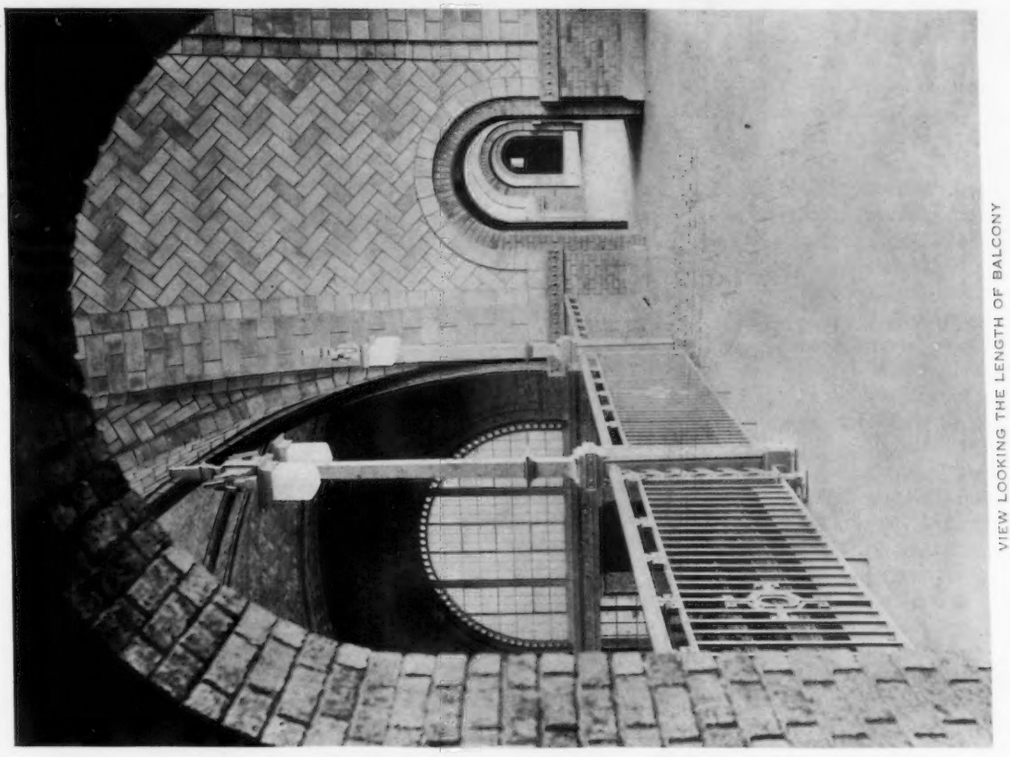
GROUND FLOOR PLAN.

The first condition for the appreciation of a building or an interior is an instantaneous recognition of its form. This is the element which produces what we call "repose" — the most essential of the qualities that make what is admirable in architecture. But this by no means indicates that repose can be obtained through a lack of ornament, but rather that the decoration should be so disposed that the structure stands out before the ornament.

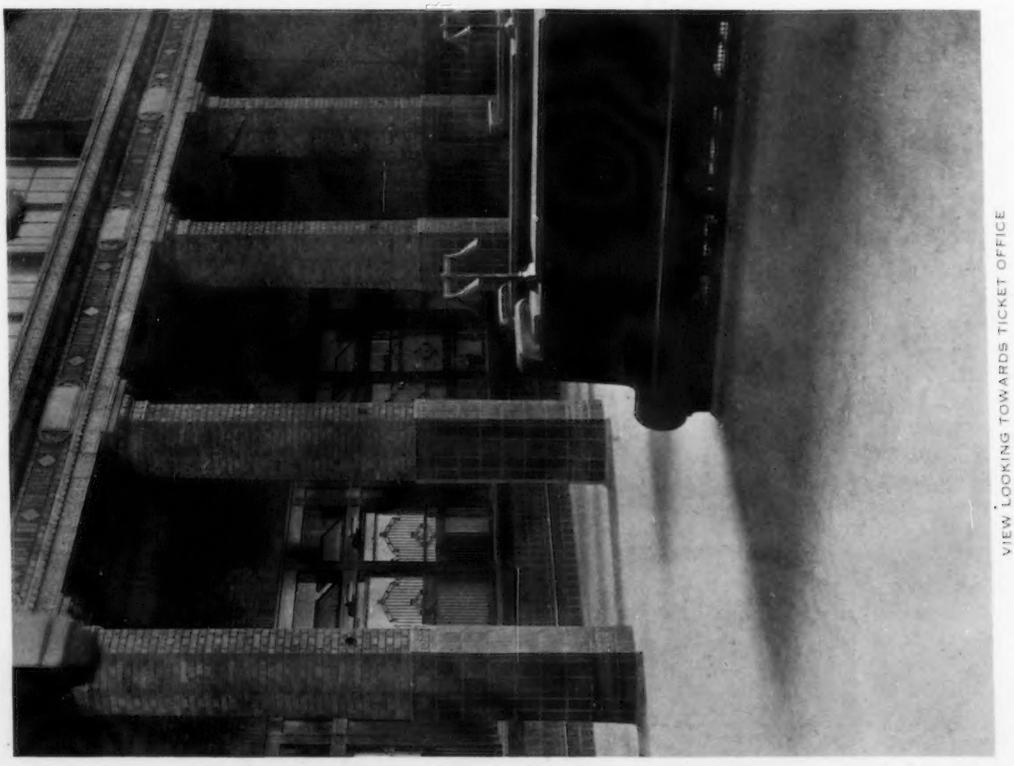
This effect has been obtained in the present instance through the harmonious combination of four different burnt clay products, used with a fine regard for their natural beauty and color values. The high wainscot is of deep yellow tiles bordered at the top by a simple repeating pattern in greens and blues; above this the greater portion of the wall is faced with a rough textured brick of a lighter yellow tone; then an entablature of faience, rich in many dif-



NORTH OR TRACK FAÇADE AND TRAIN PLATFORM.



VIEW LOOKING THE LENGTH OF BALCONY



VIEW LOOKING TOWARDS TICKET OFFICE

MAIN WAITING ROOM, NEW YORK CENTRAL PASSENGER STATION, ROCHESTER, N. Y.

CLAUDE BRAGDON, ARCHITECT

N. Y. CENTRAL ENGINEERING DEPARTMENT, ASSOCIATED

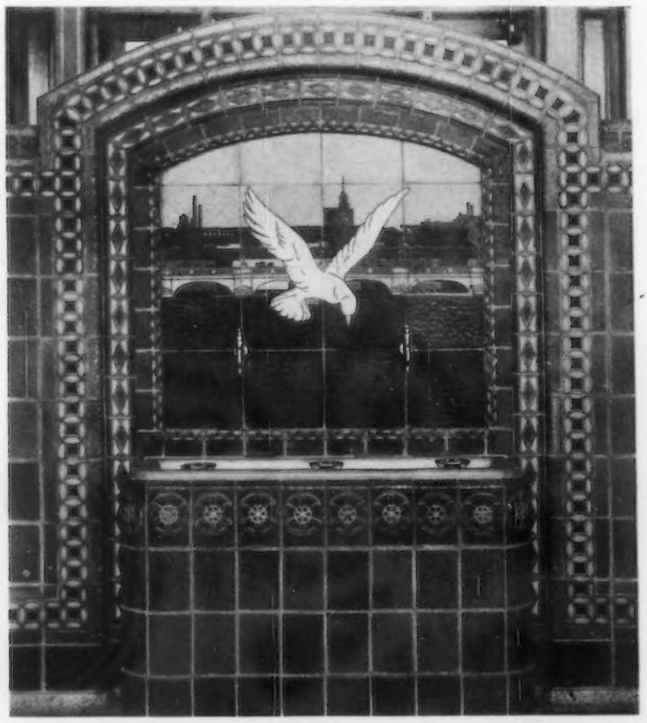
ferent colors, though blended with admirable skill and moderation, and over all the great tile vault of a yellow, paler still than the brick. To complete the color harmony, the iron work and electric fixtures have been painted gray-blue, striped with gold, and the woodwork finished a deep brown. The whole color effect is reminiscent of the autumn woods, and the room, though large and lofty, by reason of its color and ornament, avoids seeming cold and bare.

The joints throughout have been made with great care, mortar being freely used, but they are uniform in thickness in the courses of brick and tile and also for the terra cotta. The large amount of light-colored mortar has the agreeable effect of blending the various materials together and giving the entire room a soft and restful appearance.

DETAIL OF LIGHTING FIXTURE AND TILE WAINSCOT.

The "high note" of the entire color scheme occurs in the drinking fountain near the center of the waiting room, opposite the doors to the tracks. Here, in a tile panel, four feet square, a great white gull wheels above the river, against a background representing the Central avenue bridge, the railroad bridge, and the buildings beyond. It is one of the most picturesque and characteristic of Rochester views, symbolical both of the city and of the railroad and is portrayed in a most vigorous style in this example of the ceramic worker's art — in a manner not obtainable to a similar degree in any other medium. The treatment of the surrounding mouldings is in harmony with the ornamental border of the wainscot and is properly subordinated to the interest of the panel.

The tile used in the wainscot has a further advantage than its artistic appearance, — it presents a surface which is impervious to soot and dust and furnishes a practical covering for the lower portion of the walls. The slight variations in the individual tiles and the broad mortar joints give the wainscot a rough texture that lends a visual impression of support to the brickwork and vaulted ceiling above. The natural gradation of color from the dark tile wainscot to the lighter tones of the upper walls and ceiling was evidently studied with a fine appreciation of color values.



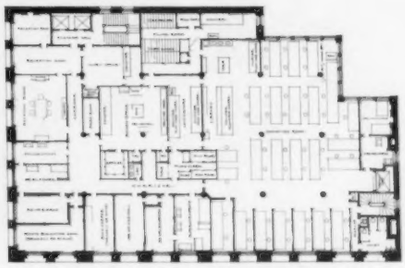
TILE DRINKING FOUNTAIN IN MAIN WAITING ROOM.

The Business Side of an Architect's Office.

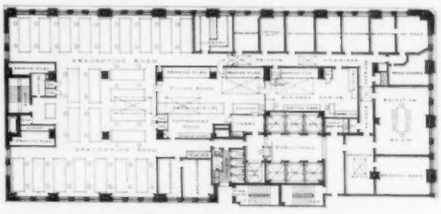
THE OFFICE OF MESSRS. McKIM, MEAD & WHITE.

BY D. EVERETT WAID.

THE office of McKim, Mead & White is a focal point of interest to architects. It is the studio and workshop of the firm whose work overtops that of any architectural office in the history of the country. It is the one office from which has come the greatest volume of architectural design and executed buildings in any age or in any country. The artistic standard of achievement has been so high and the style and quality of design so consistent that they command the respect and admiration of all the profession. Since so great a volume of work must have been the product of several minds and the handiwork of many, the genius and methods of work which could exercise such an unifying influence are naturally of interest to the profession. But Mr. Mead amazes the visitor, who may be thinking merely of the routine machinery of so great a business, by saying: "We never had any system and haven't now — have we, Fenner?"



PLAN OF FORMER OFFICE AT 160 FIFTH AVENUE.



PLAN OF NEW OFFICE IN THE ARCHITECTS' BUILDING.

As a matter of historical interest, we present a plan of the office at 160 Fifth avenue, which was occupied many years and is treasured in the memory of so large a number of the able architects of to-day who look back upon that office as the home of their youthful hopes and training. The plan indicates how the private offices were apportioned while both Mr. McKim and Mr. White were alive. An interesting comparison can be made by the reader between the old office and the new one in the Architects' Building at 101 Park avenue, New York.

The plan of the new office indicates the location of the "Information" desk, where an usher receives a caller as he arrives by the elevators and conducts him at once to any of the three reception rooms or to the lobby of the business office as the case may demand. The general scheme of the plan is quite obvious to an architect who, however, on seeing the office, will be surprised at the real extent of the place and the spaciousness of the "Business Office" and "Filing Room," which are really all one skylighted room. And a busy spot too is that center of the physical activities of the office.

The skilled man at the telephone switchboard can place an outsider in instant communication with a member of the firm or perhaps shield him by switching the inquirer to some assistant qualified to answer the call. There are four telephone booths and a dozen annunciators distributed about the drafting room. A draftsman or any one who happens to be in the drafting room can be called to some booth designated by a miniature light.

The large reception room, however, is the center of interest to the visitor and there is enough of the former office here to make one feel at home immediately. The long mahogany table, the comfortable old fiddleback chairs, and the entire simplicity of the decoration and furnishing of the room offer a lesson in the dignity and comfort of quiet good taste which is in striking contrast with some other offices where elaborate efforts have been made to design fine rooms for the effect on clients. The walls are paneled in oak with a soft grayish finish, the ceiling is tinted, and the floor inside the Istrian marble border and base is covered with a plain rug woven to tone with the oak wainscot.

The series of private offices are decorated to harmonize with the main reception room — the ceilings tinted and the walls covered with "woven paper." Mahogany furniture and soft cork tile floors complete the effect of the sort of plain luxury which is consistent with the term "office," as we ordinarily interpret it.

RECEPTION ROOM IN THE OLD OFFICE AT 160 FIFTH AVENUE.

The curious visitor walks on through the office and notes the fine "working" library invitingly accessible from the drafting room; the drawing files, which are alcoves with sets of drawings of current work bound between wood strips and hung from hooks (see illlustration of similar file closets in office of Mr. Magonigle in THE BRICKBUILDER, November, 1913); closets for storage of boards and table tops; a supply

FILING AND CONTRACTORS' ROOM LOOKING TOWARD DRAFTING ROOM.

MARBLE SAMPLES IN DRAFTING ROOM.

room from which even paper is issued from behind lock and key to prevent careless waste.

The drafting room has ceiling and frieze tinted white down to the gray picture mould, and the soft tan colored wall is reflected in the composition floor which resembles linoleum. The big room, for reasons of light, air, cleanliness, and economy of space, is clear of alcoves which were used in the old office. The firm recognizes the fact that an architect's office is a hazardous fire risk and so forbids smoking in the drafting room.

The specification room has an interesting device which in part could be useful in the corner of a small office. On each of three sides of the room there are hung from the ceiling two curtains of strong muslin as large as the side of the room will allow. One is hung some three inches in front of the other, and, being on spring rollers, they can be run up and down at will to display pinned to their surfaces a whole series of drawings. For one large building the lower halves of all six curtains could be used at once. The specification writer can walk around the room with his eyes on the drawings, dictating specifications to his stenographer. The expert who has done the work for McKim, Mead & White for many years has no need for reminders or card forms, though he occasionally follows a specification which he has written previously for a similar building. But he has one convenient memorandum in the form of a single sheet of blank paper, perhaps 24 inches wide, ruled in vertical columns headed by "Mason," "Carpenter," "Structural Steel," "Ornamental Iron," etc., one column for each trade. If he happens to be dictating specifications for mason work, he jots down in any of the other columns special items which need to be covered later in writing the other respective specifications. The single large sheet saves time which we all have wasted turning leaves to place a note aright.

A RECEPTION ROOM.

The specialist in specification writing may spend two or three days first of all in studying a set of drawings and getting instructions in the forms of answers to a series of questions. After dictation, a preliminary typewritten draft of specification is read over by a member of the firm and corrected for the final writing.

The writing of specifications for heating, electrical, and sanitary work is allotted to specialists outside the office. The same remark is true of structural engineering. Both specifications and framing plans are made by engineers in their own offices.

The so-called "filing room" contains under the extensive polished mahogany-birch counter tops steel cabinets of very large drawers in which are kept "flat" tracings, etc. Old drawings are transferred

LARGE RECEPTION ROOM.

to a room in another story of the building big enough to engulf the entire office of the average architect. Here in tubes (though all filing would be flat if started anew) are the accumulations of years, not including thousands of drawings which it was considered could safely be destroyed.

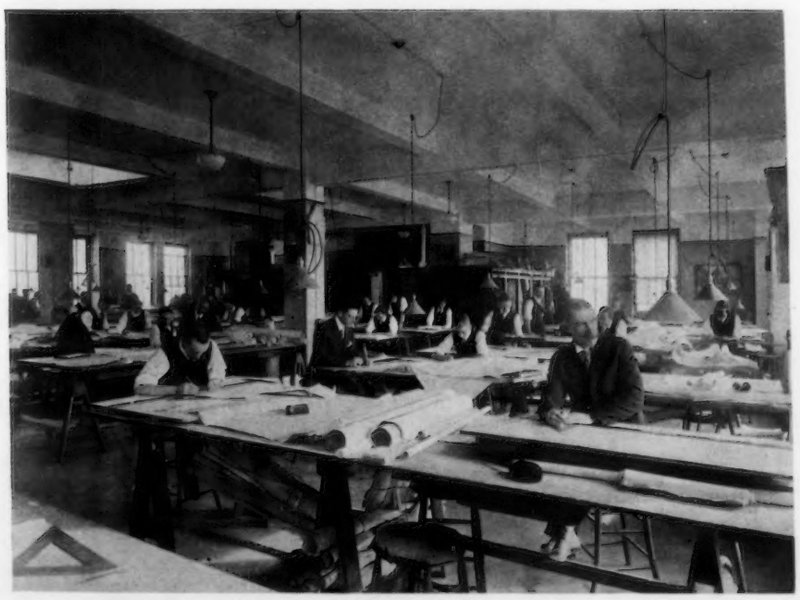
Returning now to the "Business Office," the interviewer is shown the card index, through which can be found the location in the files of all drawings. When new drawings are made, one card 6 inches by 4 inches is provided for each, on which the issue and receipt of all prints of that drawing are entered. This involves a large amount of clerical labor, as one can imagine when he sees a whole drawer full of cards for one building alone such as the New York City Post Office.

Incoming mails are opened by the chief clerk in the business office and letters sent by him to the several members of the firm. This leads us to the method of administration of the office. There is no chief draftsman, and, previous to the time of the Pennsylvania station, the firm never had a general superintendent. Each building on the boards is assigned to one of the five members of the firm. He is responsible for that piece of work throughout. He directs the draftsman in charge of that particular building, visés the working drawings before issue, deals with the client, and receives reports from the draftsman or superintendent who supervises the building. One of the secrets of the success of the firm is perhaps individual responsibility; the draftsman in charge of a particular piece of work is expected to follow it through to the completion of the building, keeping in touch even when there is, as at present, a general superintendent in charge of construction. The responsible draftsman may even conduct correspondence, always sending carbon copies of his letters to the desk of the member of the firm interested. That method has certainly been the means of giving an all-round training to many a successful architect who has swarmed as it were from the hive of McKim, Mead & White.

CORNER OF THE SPECIFICATION ROOM.

THE BUSINESS OFFICE LOOKING TOWARD FILING AND CONTRACTORS' ROOM.

A RECEPTION ROOM.



MAIN DRAFTING ROOM.

The general superintendent, it may be observed here, spends half his time in the office and half out. He keeps tab on the weekly reports of the several assistant superintendents and also gets verbal reports from them or the clerk of the works on the job, and takes care of extras and changes. This system of supervision is found to work well.

The general superintendent and the expert specification writer have been mentioned. The veteran accountant who is skilled in drawing contracts carries unusual responsibilities in keeping tab on estimates, extras, orders, and certificates, aside from all the office accounts which include a notable system of keeping office costs on each building. One

other important member of the office staff is an experienced estimator who has had training in a contractor's office. He is engaged in making carefully detailed estimates to arrive at the total cost of prospective buildings while designs are in preliminary stages. He is also kept busy checking up contractor's estimates for extras and deductions on work under construction.

Some stray items of information regarding the practice of the office may be noted thus:

Letters are filed by buildings, by subject, in order of date, in vertical files.

Letter press copy books, one for each building, are kept as a precaution lest carbon copies go astray.

Telegrams are copied in special books.

Contracts provide that the owner may carry fire insurance to the amount of payments made, and the contractor is expected to carry insurance to cover his interest.

Bonds from contractors are seldom required except on public work.

The firm has its own form of agreement for building contracts.

Orders for extras and certificates are in the usual form. A short form order is used for lesser contracts, accepting an estimate, and signed of course by architect and owner.

One excellent form used is a printed application for builders' payments.

The firm does not use printed forms for superintendents' reports, but they have kindly consented to our printing the following excerpt from a routine construction report which indicates their scope and completeness.

PENNSYLVANIA STATION—MONTHLY REPORT.

March 31, 1910.

Messrs. McKim, Mead & White,
160 Fifth avenue, New York.

Dear Sirs: — I transmit herewith my report showing the progress and general condition of the work to date:

WEATHER.

Total number of days in working month	35
" " " Sundays and Saturdays (½ days)	7½
" " " holidays	0
" " " days worked	27½
" " " working days to date	713

LABOR.

Exclusive of executive force, the George A. Fuller Company are employing an average of 476 men per working day, classified as follows: 160 masons' helpers, 15 masons, 1 stone setter, 44 carpenters, 87 carpenters' helpers, 1 engineer, 3 carpenters' apprentices, 1 mason's apprentice, 19 ironworkers, 58 painters, 4 electricians, 1 blacksmith, 1 blacksmith's helper, 28 day watchmen, 17 night watchmen, 9 wire lathers, 1 rivet boy, 3 derrickmen, 1 stonecutter, 8 plasterers, 5 helpers, and 9 cement masons.

All contractors combined employed an average of 767 men; total men employed per working day by all contractors average 1,243.

	Estimated Totals.	Received to date.	Set or Used to date.	Set Since last rep.	Per cent finished.
Granite (exterior)	480,200 cu. ft.	480,200	480,200	0	100
" (misc. and conc.)	60,000 cu. ft.	60,000	60,000	0	100
Marble (exterior)	5,576 cu. ft.	5,576	5,576	0	100
" (interior)	8,035 cu. ft.	8,035	7,200	370	90
Marble and Slate (misc.)	15,000 cu. ft.	14,850	14,825	25	99
Terrazzo Floors	2,452 sq. ft.	2,452	2,452	0	100
Travertine	71,533 cu. ft.	71,433	71,000	3,300	99

(The estimate of material received and used continues through ornamental iron, cement, painting, glazing, etc., etc., to include every material which has arrived at the works to the date of the report.)

GRANITE.

Exterior, Concourse, and Miscellaneous.

This stonework is completed in accordance with the original contract.

MARBLE.

Exterior.

This work was completed on July 31st, 1909.

Interior.

This work has all been set, except the flooring in the sub-waiting rooms, the setting of which has been started.

Cleaning and pointing of work in this contract is progressing and is about eighty per cent complete.

(The report continues under various headings, "Cut Limestone," "Concrete," "Brick Work," "Cork Flooring," etc., etc., to the extent of ten typewritten pages.)

Appended is a letter from Mr. H. Van Buren Magonigle, with reference to the description of his office, published in our previous issue:

"I have read with interest your article in the November BRICKBUILDER; but there is one correction, rather vital, which I should like to see made in some way. You say 'all expenses directly chargeable to individual work, including specification writing, *and including a salary which the architect allows to himself, are called drafting expenses.*' I do not allow myself a salary — but when I work on any job as a draftsman, I keep my time, and the *hours* so spent go to make up the total drafting-room hours, and affect the 'unit of overhead charges' obtained by dividing the total overhead per month (rent, light, towels, ice, office boy, stenographers, supplies, telephone) by the total of drafting-room hours per month. But no charge for my time as a draftsman is posted against the drafting cost of any job, for I consider my salary to be the profit (if any, alas!) on the work.

"Referring to your comment, 'Inasmuch as there is a great disparity in salaries per hour, a uniform allowance per hour for overhead would appear rather disproportionate'; it is worth while pointing out that a draftsman at $100 per month occupies just as much office space, uses the same amount of light, drinks as much ice-water, uses as many towels, as much paper, as many pencils as a man at $200 per month; and that on the job he is working at there is no greater proportion of office boy's and stenographers' work or telephone service chargeable in the one case than in the other; so that the salary a man gets has no relation whatever to overhead expense.

H. Van Buren Magonigle."

It would be interesting to theorize as to the distribution of overhead charges on work done entirely by high-salaried draftsmen as compared with another piece of work done entirely by low-salaried draftsmen, and then on a third piece of work done by both high- and low-salaried men. How would they figure out in contrast with the usual method of estimating from the year's previous experience that on any job the overhead charge will amount to a fixed percentage of the actual drafting expense charged up to that job?

Expressions of opinion and experience concerning the two methods of calculation will be welcomed by the author.

DETAIL OF MAIN ENTRANCE

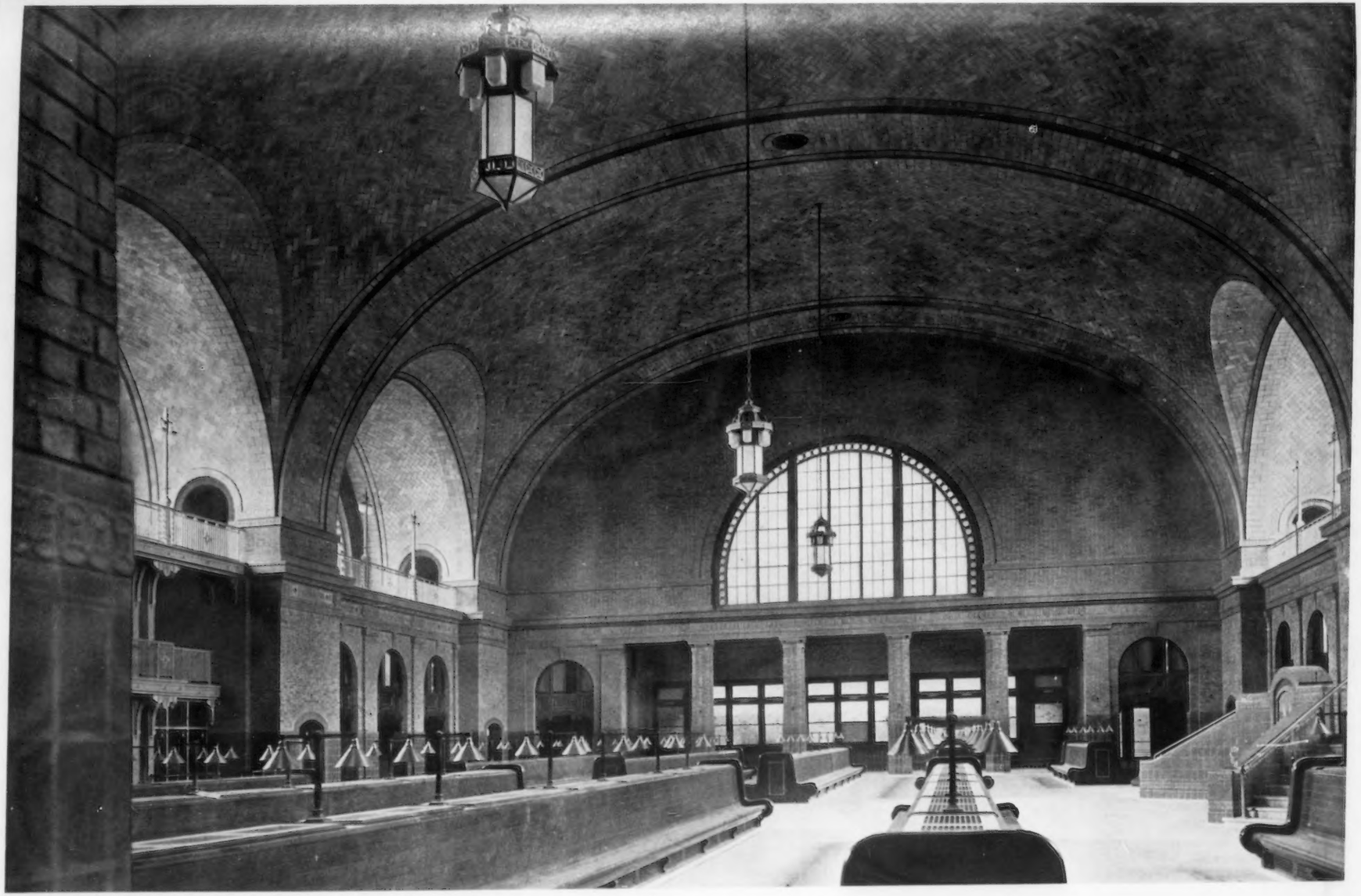
GENERAL VIEW

CLINTON AVENUE ELEVATION

NEW YORK CENTRAL PASSENGER STATION, ROCHESTER, N. Y.

CLAUDE BRAGDON, ARCHITECT

NEW YORK CENTRAL ENGINEERING DEPARTMENT, ASSOCIATED

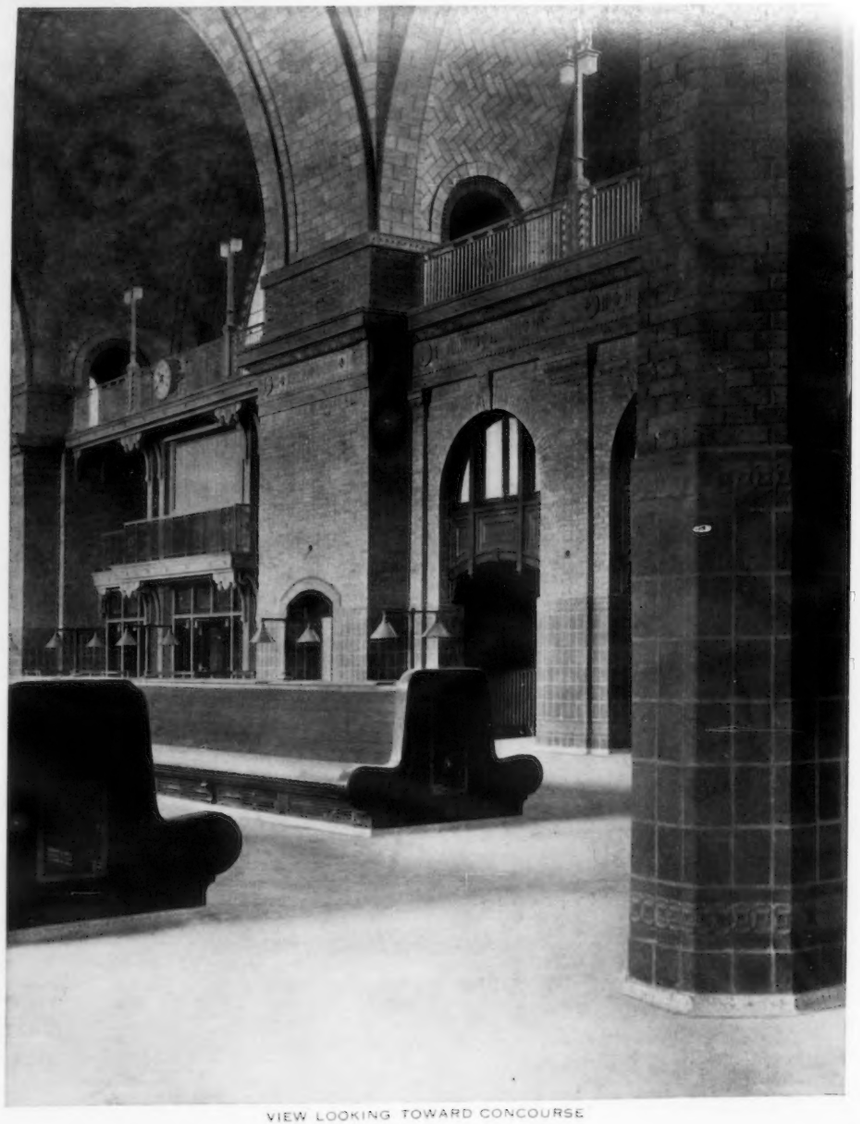


GENERAL VIEW OF MAIN WAITING ROOM

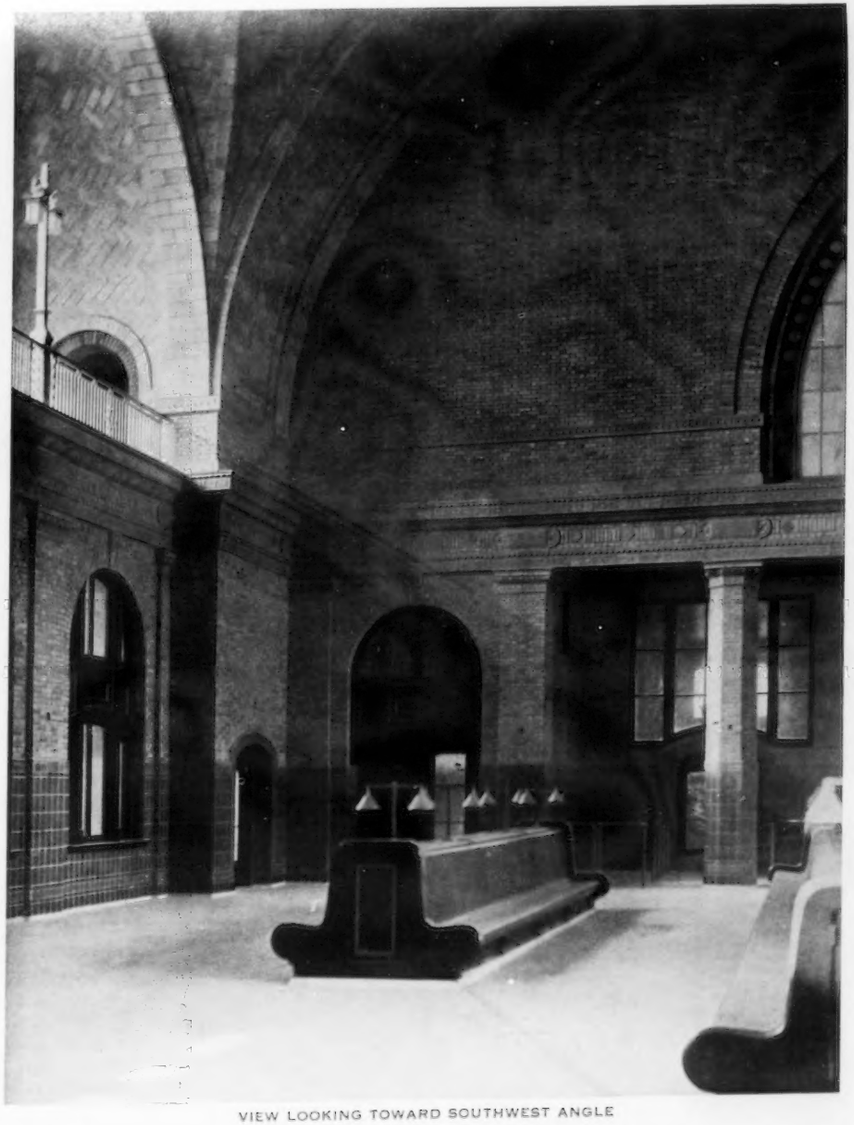
NEW YORK CENTRAL PASSENGER STATION, ROCHESTER, N. Y.

CLAUDE BRAGDON, ARCHITECT

NEW YORK CENTRAL ENGINEERING DEPARTMENT ASSOCIATED



VIEW LOOKING TOWARD CONCOURSE



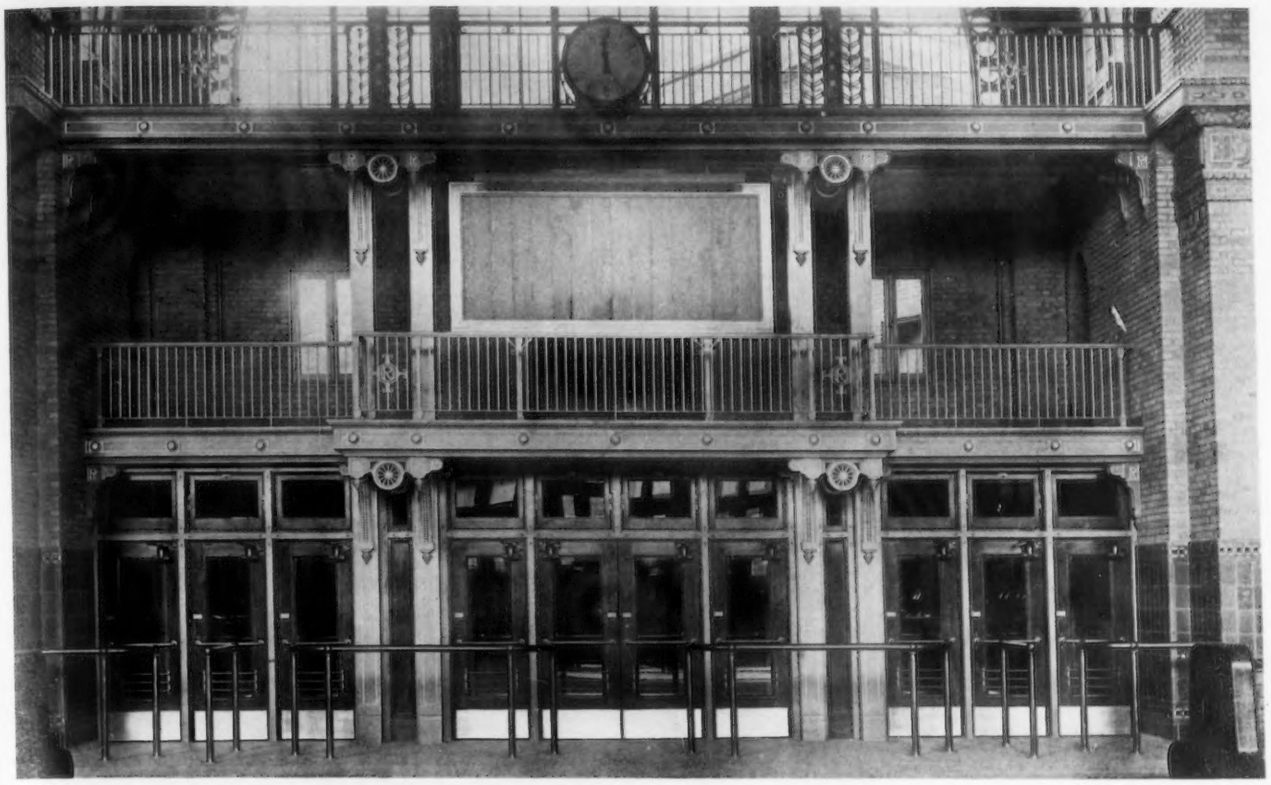
VIEW LOOKING TOWARD SOUTHWEST ANGLE

MAIN WAITING ROOM

NEW YORK CENTRAL PASSENGER STATION, ROCHESTER, N. Y.

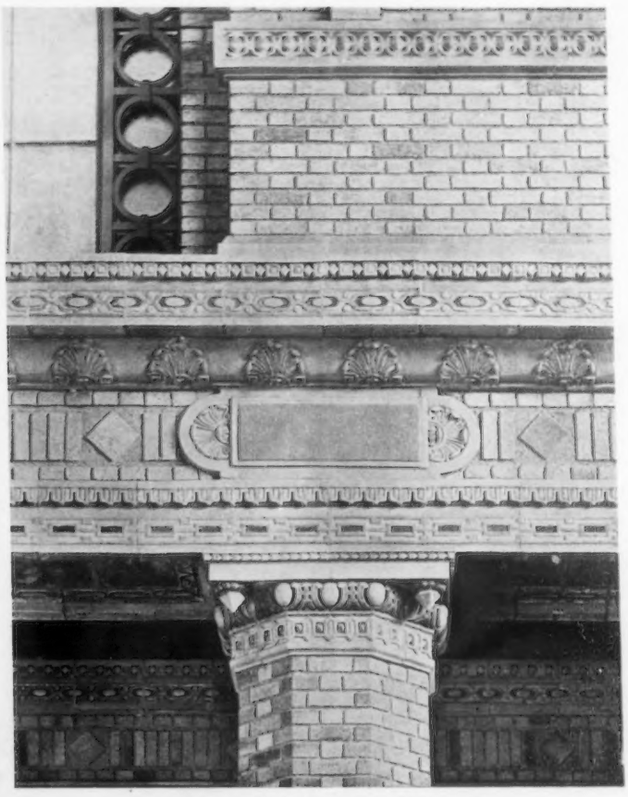
CLAUDE BRAGDON, ARCHITECT

NEW YORK CENTRAL ENGINEERING DEPARTMENT ASSOCIATED



EXIT TO CONCOURSE AND TRAIN ANNOUNCER'S BALCONY

DETAIL OF BRICKWORK AND LIGHTING FIXTURE



DETAIL OF COLUMN AND ENTABLATURE

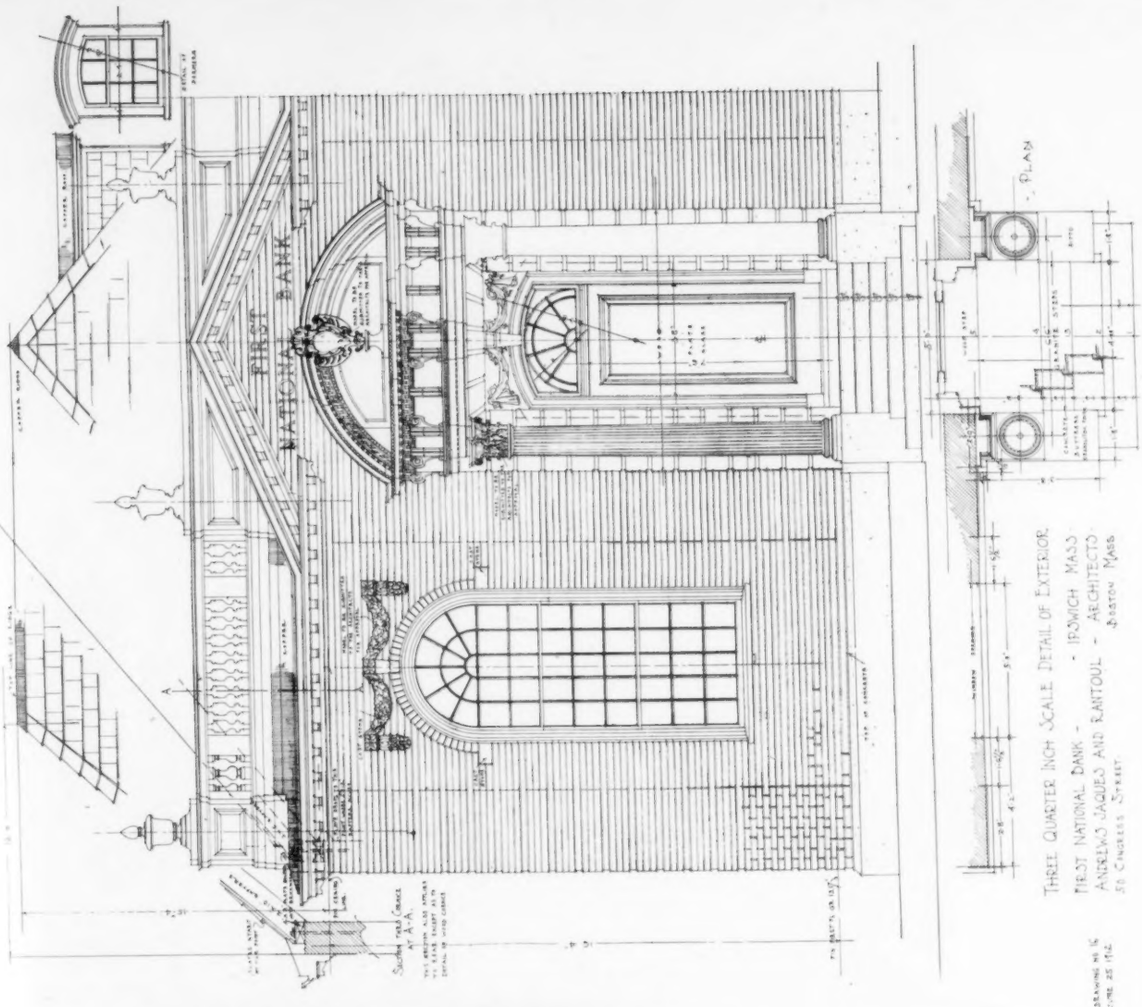
MAIN WAITING ROOM

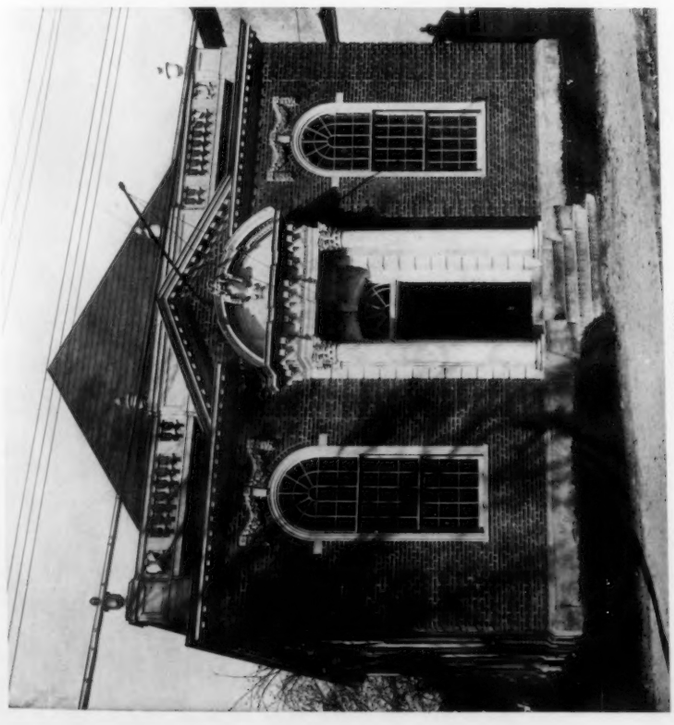
NEW YORK CENTRAL PASSENGER STATION, ROCHESTER, N. Y.

CLAUDE BRAGDON ARCHITECT

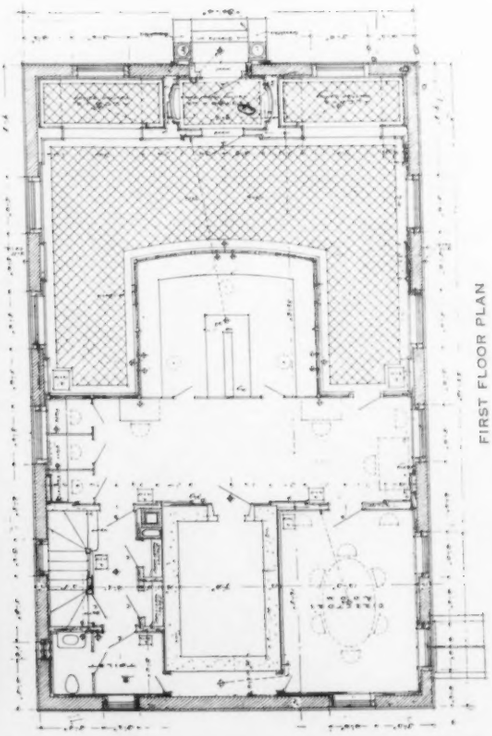
NEW YORK CENTRAL ENGINEERING DEPARTMENT ASSOCIATED

FIRST NATIONAL BANK IPSWICH, MASS
ANDREWS, JAQUES & RANTOUL ARCHITECTS


FIRST NATIONAL BANK
PLAN
THREE QUARTER INCH SCALE DETAIL OF EXTERIOR
FIRST NATIONAL BANK - IPSWICH MASS.
ANDREWS JAQUES AND RANTOUL - ARCHITECTS
50 CONGRESS STREET BOSTON MASS
DETAIL OF FRONT ELEVATION

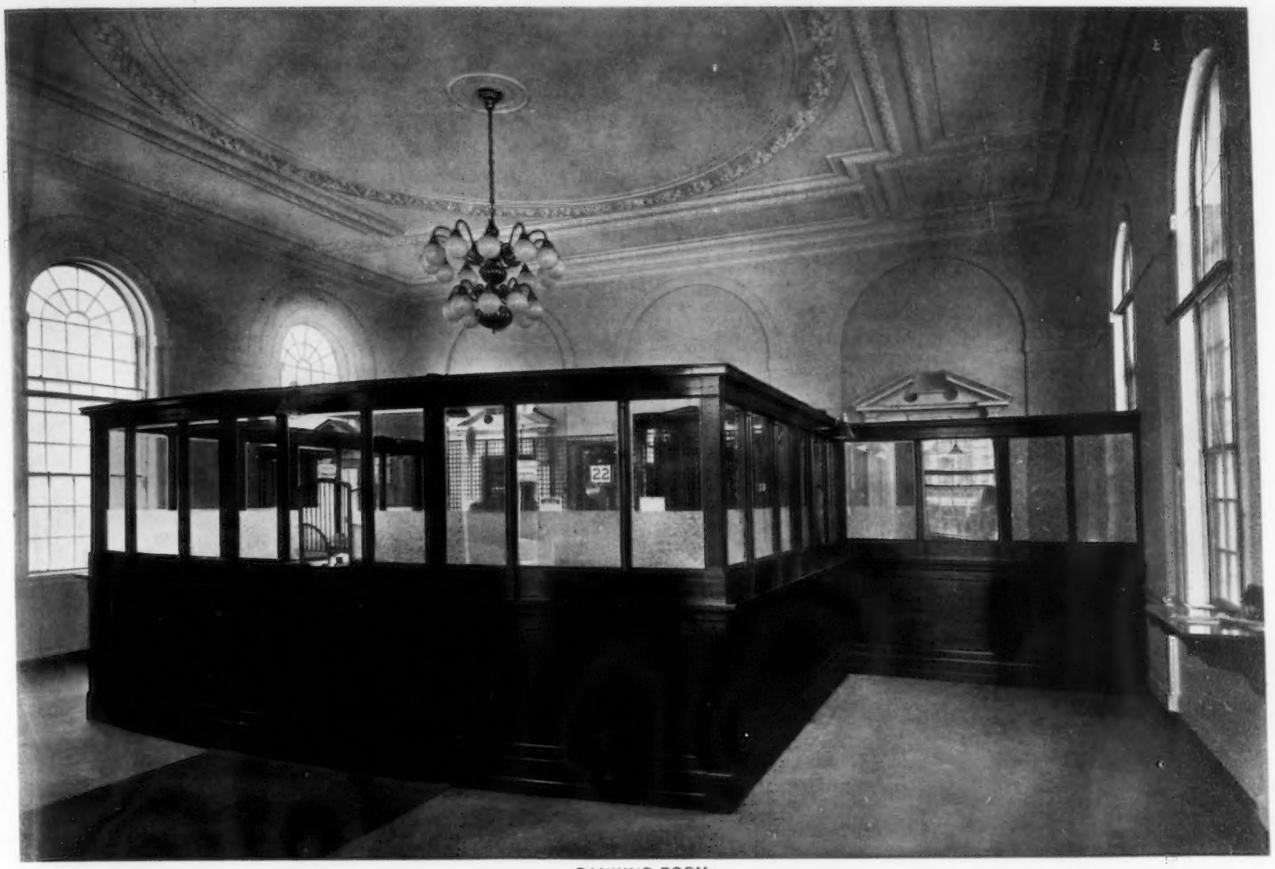


GENERAL VIEW

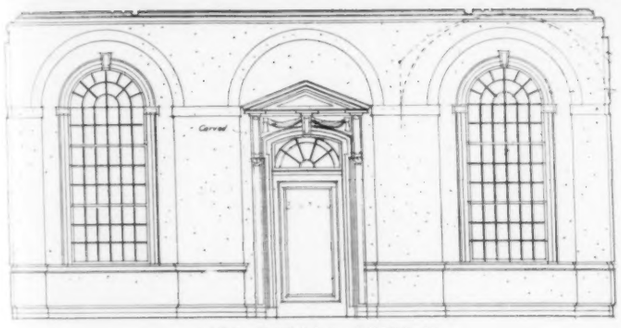


FIRST FLOOR PLAN

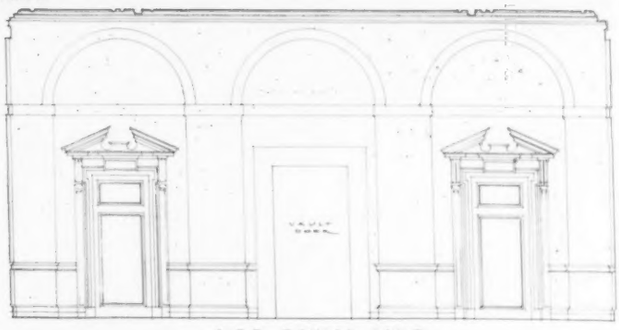
FIRST NATIONAL BANK, IPSWICH, MASS.
ANDREWS, JAQUES & RANTOUL, ARCHITECTS



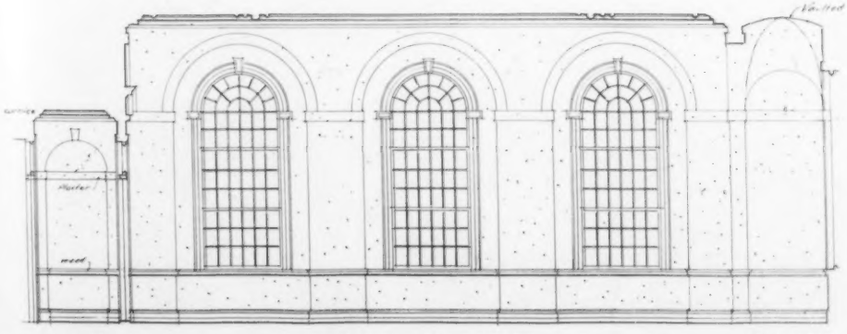
BANKING ROOM



SIDE TOWARD ENTRANCE



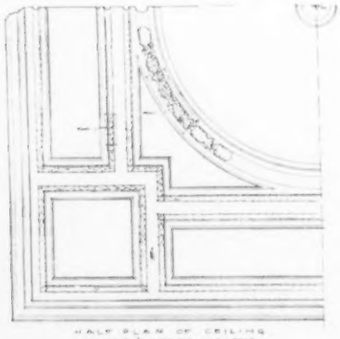
SIDE TOWARD VAULT



SIDE OF VESTIBULE

SIDE ELEVATION

ALCOVES EACH SIDE OF VESTIBULE

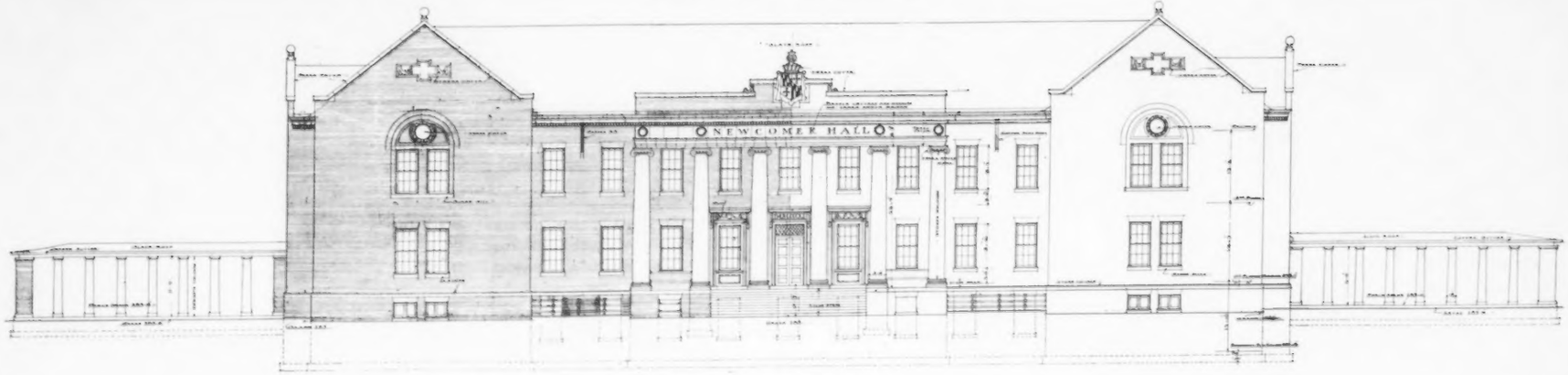


HALF PLAN OF CEILING

INTERIOR ELEVATIONS AND ONE QUARTER CEILING PLAN

FIRST NATIONAL BANK, IPSWICH, MASS.
ANDREWS, JAQUES & RANTOUL, ARCHITECTS

GENERAL VIEW OF NEWCOMER HALL

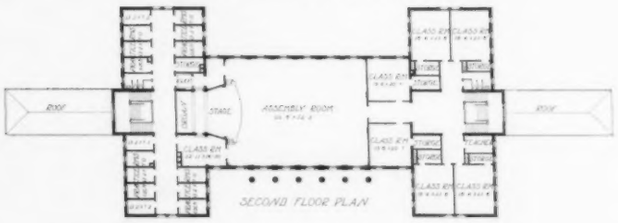


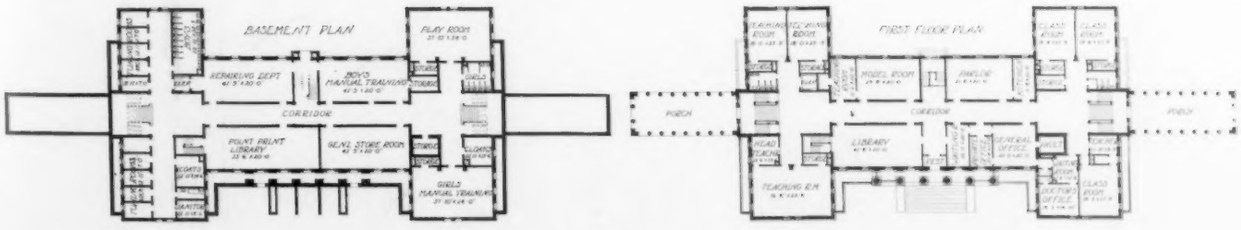
PRINCIPAL ELEVATION

MARYLAND SCHOOL FOR THE BLIND, BALTIMORE COUNTY, MARYLAND

JOSEPH EVANS SPERRY ARCHITECT

DETAIL OF PORTICO, NEWCOMER HALL

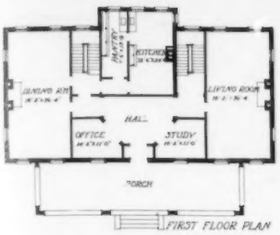




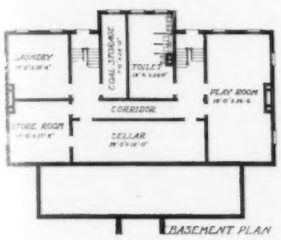
MARYLAND SCHOOL FOR THE BLIND, BALTIMORE COUNTY, MARYLAND

JOSEPH EVANS SPERRY, ARCHITECT

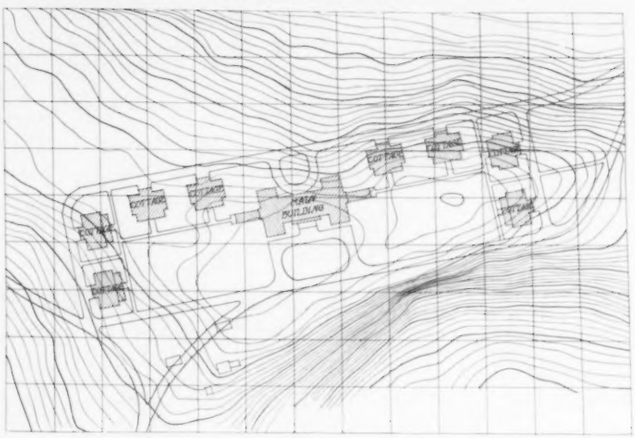
GENERAL VIEW OF GROUP



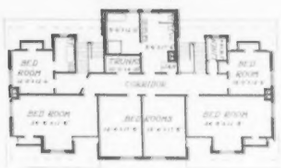
FIRST FLOOR PLAN



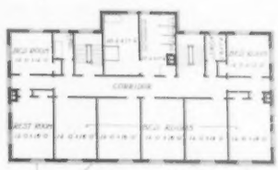
BASEMENT PLAN



GROUP PLAN



THIRD FLOOR PLAN



SECOND FLOOR PLAN

GENERAL VIEW OF TYPICAL COTTAGE

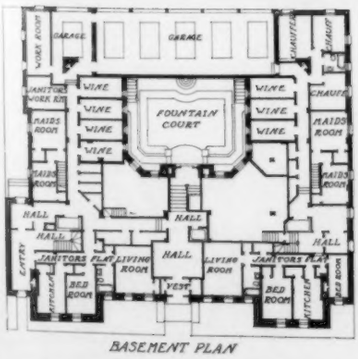
MARYLAND SCHOOL FOR THE BLIND, BALTIMORE COUNTY, MARYLAND
JOSEPH EVANS SPERRY, ARCHITECT

Mabu

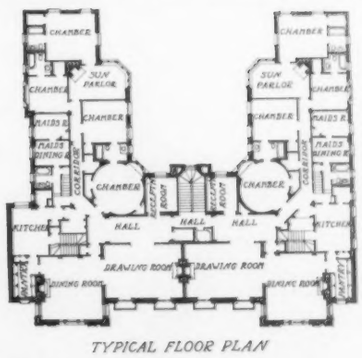
CHANDLER APARTMENTS

BELLEVUE PLACE, CHICAGO, ILL.

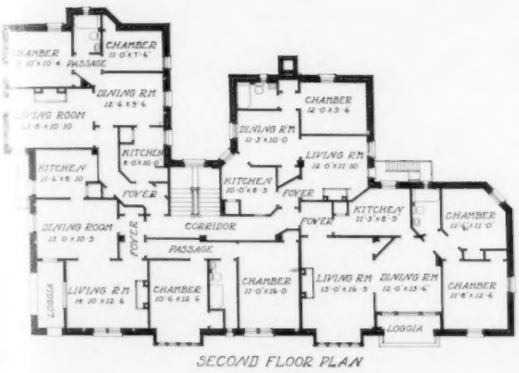
SCHMIDT GARDEN & MARTIN, ARCHITECTS



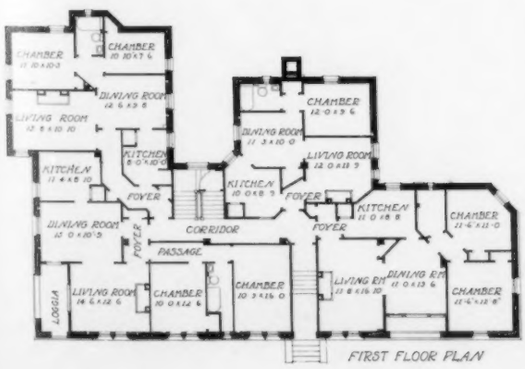
BASEMENT PLAN



TYPICAL FLOOR PLAN



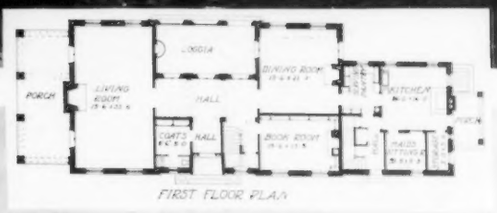
SECOND FLOOR PLAN



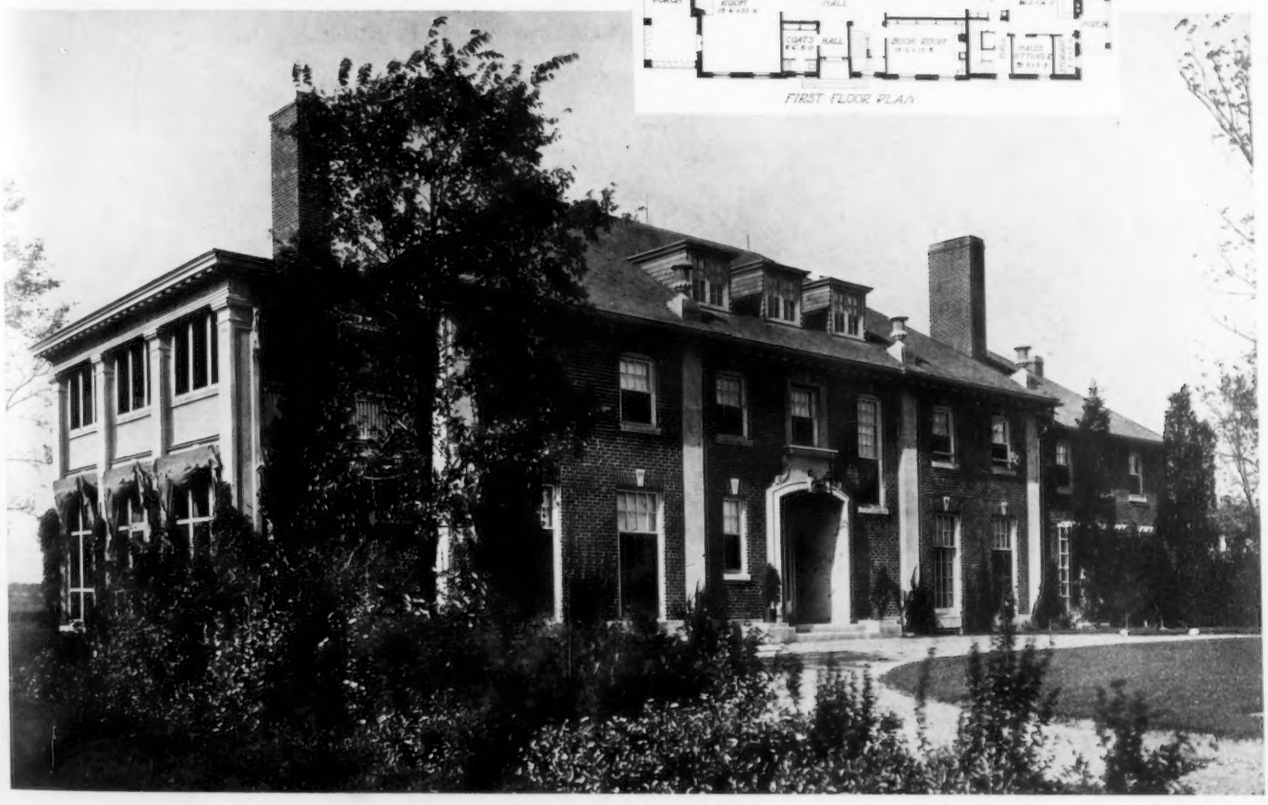
FIRST FLOOR PLAN

CANTERBURY HALL APARTMENTS, BALTIMORE, MARYLAND

E. H. GLIDDEN, ARCHITECT



FIRST FLOOR PLAN



HOUSE AT LAKE FOREST, ILL.
HOWARD SHAW ARCHITECT

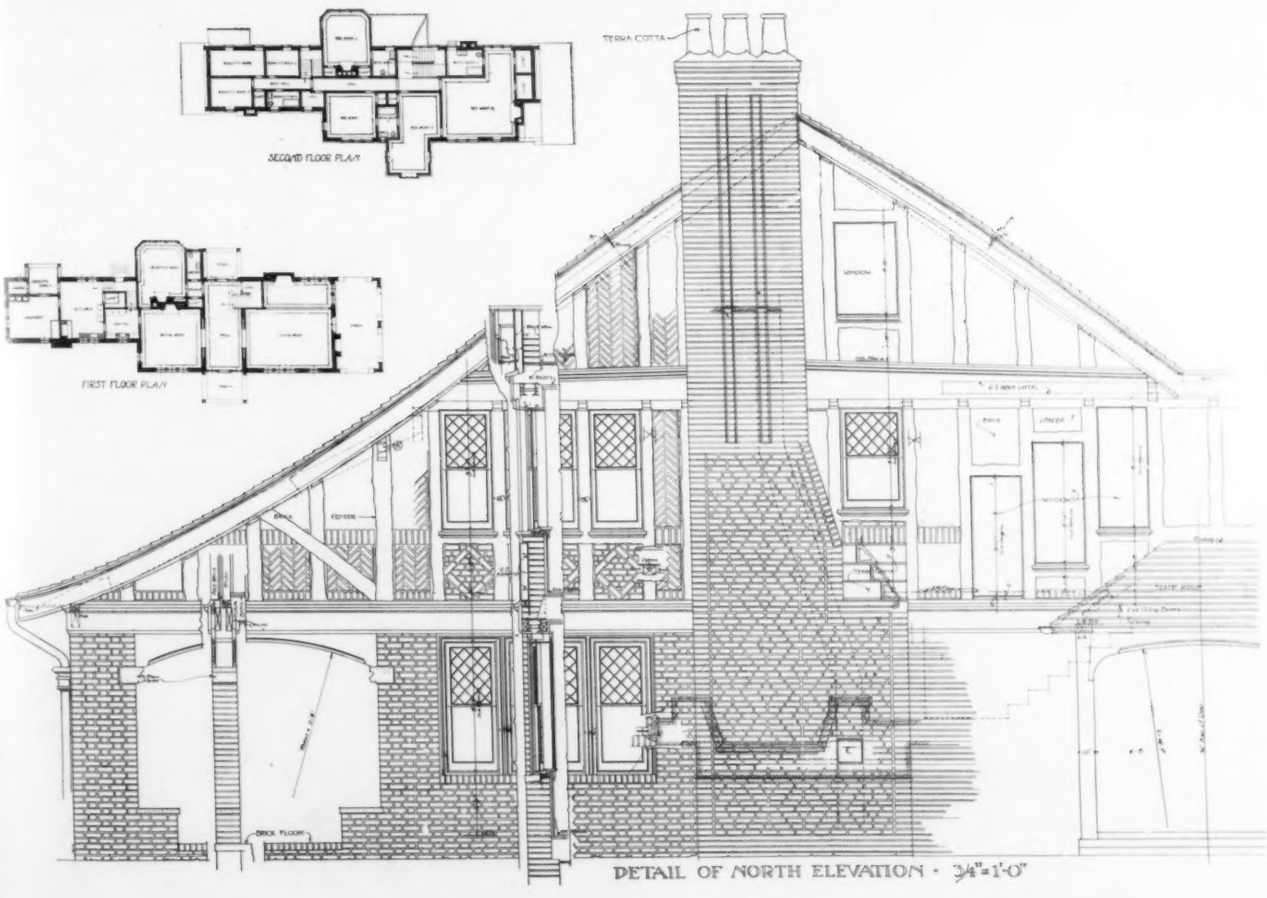
DINING ROOM

BOOK ROOM

HOUSE AT LAKE FOREST, ILL.
HOWARD SHAW, ARCHITECT

HOUSE AT GREAT NECK, LONG ISLAND, N. Y
WILLIAM ADAMS ARCHITECT

Uof M



DETAIL OF NORTH ELEVATION · 3/4"=1'-0"

HOUSE AT GREAT NECK, LONG ISLAND, N. Y.
WILLIAM ADAMS, ARCHITECT

Architectural Jurisprudence.—Part VI.

THE ARCHITECT IN COURT.

BY WILLIAM L. BOWMAN, C.E., LL.B., OF THE NEW YORK BAR.

IN this paper we will consider some of the interesting phases of litigation over architects' services and those matters of interest to the architect in his capacity as a witness. A knowledge of the common defenses used in actions to recover for professional services is a safeguard which no architect should neglect. Those having experience are well aware of the attitude of the ordinary juryman. The public opinion that the doctor, lawyer, architect, engineer, etc., are all charging the limit, or "what the traffic will bear" is carried to the jury room with unfortunate results. In one of my own cases an architect was suing for two and one-half per cent for the preparation of working drawings of a $30,000 loft building. As a witness, the architect proved his contract of employment at the usual architectural fees; and as an expert, testified that the reasonable value of his services was the same as his contract price. The defense did not deny the contract of employment nor did they put in any evidence to the contrary as to the value of the work done, so that it became merely a question as to whether or not the architect had skilfully and properly performed his architectural duties so as to entitle him to the compensation claimed. When the jury returned from their deliberations they rendered a verdict for two hundred and fifty dollars ($250). At a loss to understand how they could arrive at such a small amount, I asked one of the jurymen whether it was a compromise verdict. I was then informed that several of the jurymen had claimed that they were familiar with the value of architects' plans; that they could get them for $50 a set; and since in the presentation of the case there had been marked as exhibits two sets of sketches, two sets of preliminary studies, and one set of working drawings, or five in all, they had allowed $50 for each set, or $250 for the services rendered. This ridiculous method of computing the value of an architect's services shows to what extremes juries may go in their deliberations.

In another case, where the architect was suing for $390 as a balance of a five per cent commission, the jury brought in a verdict of $200, having deducted $190 for damages to the owner, since the architect had permitted a plumbing system to be installed which deviated essentially from the plans and specifications. Upon this verdict the court as a matter of law then decided that such deduction showed that the architect had not substantially performed his architectural duties and, therefore, there could be no recovery by the architect, and the verdict for $200 was set aside. These examples and experience show that juries are uncertain quantities, and especially so when it comes to valuing professional services. In rural and in large manufacturing communities it is almost a rule that the value of such services will be very greatly reduced by the juries from the value set either by the professional men themselves or by experts whom they call to substantiate the reasonableness of their charges.

Having noted the eccentricities of this most important factor in litigation — the jury — and keeping this in mind, let us now consider some of the usual defenses used against an architect's action for services.

Defense of No Contract.

Where an architect sues for services and alleges a certain contract the defendant usually pleads a denial of such contract. That denial may be either because the defendant is not the real employer of the architect, or because the defendant believes the contract was different than that set forth. The question as to who is the proper party to sue often becomes of practical importance long before an action is thought of, since charges are made in the books, and bills rendered for partial payments, and these facts may tend to show the party to whom credit was given by the architect. If it should be the wrong party legally, it may cause trouble later when attempts are made to collect from another party. These difficulties especially arise in cases of agency. If the agent is financially responsible he can ordinarily be held personally liable, unless he exonerates himself by showing his authority to bind his principal or employer, or by showing that the contract made by him is binding upon such principal or employer. Thus an alleged agent for a church has been held personally liable for plans ordered for the church; again each of the signers of a church contract have been held responsible where the church legally and properly repudiated the agency. A failure to make a proper choice of whom to sue for services, while it may not be fatal, is, however, expensive in time and money. It is therefore a good business and legal policy to know authoritatively whom you are employed by and to make your book charges and render your bills against that party.

How Are You Going to Prove Your Contract?

This should be a simple matter, but experience has shown that it is often difficult where architects are concerned. An example of an architectural employment has just been reported as follows. An architect was given a chance to prepare plans and specifications for a large municipal building, his remuneration for his sketches and his employment for the preparation of the usual working plans and specifications and for superintendence depending upon the approval of his sketches by an art commission. His first sketches were disapproved, and he thereupon went to another architect for assistance. The testimony of the agreement made is reported in these words. The first architect said to the second, "If you can make me a successful plan I will do the best for you that a man can do. We are old friends. Here is your chance. . . . You say you are in your own business, you are looking for opportunities, take the risk with me. It is only three months; we must submit before election." The other replied, "What do you mean by saying that . . . you will do the best for me, etc.?" The first said, "If we win I give you a fair share of my commission." The second replied, "If I go into that you mean then to say, if we lose I get nothing and if we win I get a fair share?" Answer, "Yes." The second architect then made sketches and preliminary plans which were accepted by the art commission, and the first architect then received a contract

from the city, carrying with it a fee of about $40,000. When the second architect asked for a paper confirming their agreement and specifying his share, the first architect offered him $40 a week to continue work or nothing. An action was then started by the second architect claiming one-half of the commission. The court in its opinion held that there was no contract. That since the terms of the agreement were not definite either as to the amount of commission to be divided or as to what a fair division would be it was not an enforceable agreement. This is but one of the many examples which could be given to show the loss of thousands of dollars to an architect by his failure to put his agreement in writing and have the terms definite. Those who have had experience, and it is hoped those who read this paper, will in the future always be able to prove their contract by the production of a signed written agreement, or else by letters of proposal and acceptance, concise in their language and definite in terms.

Defense of Conditional Employment.

The defense of conditional employment is the bane of the architect and his attorney when it becomes necessary to sue. Many people seem to have an idea that an architect is only too glad to prepare even complete working drawings for the chance of getting a job. This class of people often claim to act for somebody else, and are in addition either financially irresponsible or else of such political, financial or other prominence as to enable them to bluff the architect into dropping the matter. Among the numerous conditions which are used as defense are, satisfaction to the employer, a guaranteed limit of cost, employment conditional upon securing loans, or upon the employer deciding to build.

In some of the common law states satisfaction of an employer is a serious matter and an architect would probably be held similarly as an artist or a sculptor to prove that his plans actually did satisfy the employer, otherwise there could be no recovery for the services rendered. In other words, honest dissatisfaction of the employer in such states would prevent recovery by an architect. In most jurisdictions, however, it is probable that the question of satisfaction of an employer would be covered by the same rules as the satisfaction of the architect with regard to work done by a contractor.

The defense that the architect guaranteed the cost of the building to be erected in accordance with his plans and specifications is very common and at times dangerous. In a very late decision the court considered this question of guaranteed cost in an interesting way. The facts showed that a certain party incorporated himself and acted as architect and contractor. Representations were then made to the owners of a certain piece of property that a six-story hotel building could be built on the land at a cost not to exceed $300,000 and that the premises could be rented so as to make fair return upon the investment. The architect and contractor positively asserted, stated, and represented to the owner, that the maximum cost of the building, including all commissions, would not exceed $300,000. Upon these representations a contract was entered into for the architectural and contracting work and the building was commenced. During the construction the architect and contractor got the owner to assent to modifications so that the total cost, first, should not exceed $350,000, and then finally $400,000. Later, and after repeated demands for an estimate, the owner was then informed that the building would cost $510,000. At that time $460,000 had already been expended and the owner then stopped the work. Other contractors made estimates and it was shown that the building would cost $700,000 when completed. At the same time the lessee to be refused to accept a lease and pay eight per cent per annum upon this cost. The owner then started an action for damages against the architect and contractor, and the court held that there was guarantee here that the building should cost but $400,000 under the modified agreement; also, that the defendant was not, as he claimed, an expert architect; also that the architectural services for which the owner had paid $70,000 were of no value to him, and, therefore, he should recover back that sum and in addition the excess over $400,000, which would be reasonably required in completing the building according to the plans with the agreed modifications. This total recovery, amounting to about $300,000 was rather a serious lesson for the pseudo architect and contractor.

Our considerations of this particular matter recommend, then, that an architect should always make it clear to his employer that he does not guarantee a limit of cost, that he merely makes an approximate estimate, and his compensation should never be conditional upon anything save the usual professional qualifications and duties.

In the strenuous striving for business to-day the contingent fee has secured a foothold which is seriously interfering with the character of all professional work and the standards of professional men. In fact, many people now will not give a lawsuit to a lawyer, unless he will take it on a contingent basis, nor a building to an architect unless he will make his payment contingent upon his securing a building loan, or provided only the building is erected. A solution of this evil for a crowded profession is hard to find, especially if there are different camps in the profession. The outcome cannot be foreseen, but it is incumbent upon every true architect by action at law or otherwise to prevent the free graft which is being worked upon his profession by even some honest but unthinking people.

Defense of Unskilfulness or Negligence.

Under these defenses the employer usually attempts to reduce the amount of recovery of the architect for his services by the amounts which he believes he has been damaged, due to such causes. Where a recovery is allowed the architect because he substantially performs his contract, such recovery should be the contract price or the reasonable value of his services reduced by the loss caused the owner through any injurious departure from the plans and specifications or by the cost of remedying the defects in the construction which would have been discovered had the building been given proper supervision. The evidence in such cases is interesting to note. It has been held that a report by the architect showing over one hundred items in which the building as completed did not comply with the plans and specifications was admissible, as this would apparently show the lack of proper supervision. Again, where an architect certifies that defective work conforms with the contract, the presumption is either that he did not inspect, or that he was negligent in so doing.

Summary.

Our considerations have shown us the chief difficulties confronting the architect when he attempts to recover compensation. It would almost seem better that the architect do less work and always be assured of his payment in accordance with a written contract, specific in its terms. The general public will not recognize the value of his services and that prejudice is carried into court by the men who have to be chosen as jurymen. The result is, that no matter how good a case the architect may have, he should never expect to recover the amount he claims or the Institute charges in full because of the attitude of the jury and because there is sure to be a counterclaim against him for one thing or another which will generally appeal to the jury. It is therefore recommended that most disputes respecting an architect's compensation should be settled, if possible, by arbitration; or, if necessary, by having a competent attorney take it up solely with the intention of settling. In this way the architect will often secure as much compensation as he would by a long-drawn-out law suit, and save himself the enmity which such action always arouses. This advice, however, does not apply in those cases of alleged conditional employment or cases of oppression and graft.

As a Witness.

Probably there is no other class of work where there are so many controversies and lawsuits as are found in connection with construction work. In actions thereon the architect is a necessary witness, because of his intimate connection with the job. Can he be compelled to act as such a witness upon the ordinary subpœna and for the regular, small witness fee? There seems to be no question but that his employment on his percentage commission does not include such services. Yet it is well settled that an architect may be compelled to go to court, by the service upon him of a subpœna and payment of the legal witness fees. His testimony can then be demanded as to what he saw, heard or did on the job, or in connection with the matter involved with the action, but he cannot be compelled or required to prepare himself by an examination and research to give a technical opinion without increased compensation. In other words, as long as he acts merely as an ordinary witness who is supposed to supply to the jury only the "raw materials" for judgment, or, as long as he merely acts as the eye, or ear, etc., of the jury to represent to them and reproduce for them certain scenes, then he cannot refuse to testify without extra compensation. When he is asked to reason or to state his knowledge, or to give his opinion based on a hypothetical question, then he is entitled to compensation beyond the customary witness fees.

This consideration shows us that an architect who expects trouble over work being done under his supervision should always try and secure an agreement with his employer covering the extra work necessary to prepare for and testify at an arbitration or at a trial in court. An architect should always expect controversies and even litigation respecting his employment. On this account, and because he is often the sole cause of the litigation between his employer and the contractor, he must be prepared to support his professional contentions and actions. To-day in many municipal contracts all orders, directions, notices, satisfaction or dissatisfaction are required to be put in writing by the engineer or architect, which means that no consideration need be given conversations or oral directions. This is an excellent contract condition and this requirement should be adopted by the architect even in private work, as it reduces to a minimum many questions of veracity which are sure to arise when matters get into court. Daily reports by the clerk of the work, personal records made by the architect as to conditions at the times of his various visits on the job, and also personal records of all conversations made soon after such conversations are held, photographs, etc., can make an architect's testimony almost conclusive and at the same time give him a standing and reputation with the jury which is difficult to assail. Carelessness and negligence in these respects have lost owners many lawsuits and as a necessary consequence it has resulted in some disrepute being cast upon the architectural profession. An owner in his dealings with his contractor usually acts under the advice of the architect until the time comes to actually start or defend an action. Thus it is that when an attorney is engaged in the matter, the architect has already often made or ruined the owner's chances of success.

In supporting his estimates and certificates, the architect must always expect severe cross examination, since it is only by showing fraud or collusion that the other party can hope to win his case. Arbitrary and high-handed methods by the architect, either in his supervision work or in his attitude as a witness, are sure to condemn him with the jury on the case and hence it is especially desirable that the architect on the witness stand assume, if possible, the position of a disinterested professional man whose only idea is that of justice and equity between the litigants. Honesty and frankness, especially in answering questions of a cross-examiner, will often make a great difference in the credibility which the jury will give his testimony. It is remarkable how quick jurymen are to notice bias, prejudice, or an inclination to dodge; and slight discrepancies in testimony very frequently cause the entire evidence of a witness to be wholly disregarded. The cure for such evils is too obvious to need mention.

As an Expert Witness.

Not many years ago the rules of evidence were so strict that the expert was called upon on all occasions when any special knowledge was required and even to prove matters of common knowledge. There has been a tendency of late to do away with the expenses and troubles caused by calling such experts to prove matters of knowledge easily available to all. The conflict between courts as to their knowledge is amusing; for example, while the Supreme Court of the United States does not know of the dangerous nature of cigarettes, yet it is known to the Supreme Court of Tennessee. Thus it is that the various jurisdictions have widely different rules regarding the necessity for the use of experts. A judge is not required to know a particular fact judicially and he may even decline to take any cognizance whatever of an alleged fact of common knowledge. On such occasion there is necessity for proof of such matters. In this connection a judge cannot be expected or required to make computations, although he may do so if he so desires.

Until lately the name of expert was given to a witness, "first: who may contribute facts known to those in his trade or calling; second: who may submit inferences and conclusions, acts of reasoning based, more or less, complete on observation; and third: who may offer his judgment as an act of pure reasoning rested upon the assumed truth of certain facts stated to him in the form of a hypothetical question." The latest text-book on the subject distinguishes between a skilled witness, who should state facts, or, by way of inference, what he claims to know as covered by the first and second definition above; and the real expert, who should testify as to his reasoning upon facts known to others. That is, technically speaking, the expert witness should be confined to those who pass upon the questions which are to be decided by the jury as aids to the jury to enable them to reach a right conclusion from the facts before them.

Whether or not an architect can qualify as a skilled witness or as an expert is a matter for the judge, who is trying the case, to determine, the requisites being adequate knowledge and experience respecting the matter in question. Generally speaking, anybody who has had any experience is competent to act as a skilled witness as differentiated from an expert. An architect may, of course, testify as to his inferences from what he has observed regarding building matters; he may testify that sufficient shoring has been done for the protection of a specified building; he may state what is the cause of a given effect in a building which has come under his observation, or in like manner, he may assign a cause for any observed occurrence in the same connection. An architect may properly state the probable cost of a house or church, or other structure observed by him, and this has been held even in a case where the architect was refused admission into a building and could only make his estimate from seeing the outside of the building. He may, of course, also estimate the expenses of specific repairs to any structure. It has been held that an architect would be allowed to estimate after observing the services rendered by a particular workman as to what they are fairly worth. He may also state, if an expert, whether a piece of work has been well done and he may estimate its value on this basis. Whether or not a given workman is skilful in his calling, is something as to which the conclusion of an architect as an expert may be relevant. Architects who have had adequate experience may state how houses, buildings, or other erections are, or should be, constructed or repaired and in what manner operations concerning them are properly performed. He may also testify as to the durability of timber of various kinds, its strength and consequent adaptability to special uses as part of a house for the stringers, or other parts for other structures; the ability of the usual building material to resist certain strains; the effect on them of changes in temperature, or of weather condition or decay, etc.

Only an architect may properly testify as to the value of the services of another architect, although, of course, the jury are not required to acquiesce in the estimate of the witness. This rule of proof by members of the same profession, however, is not always carried out to its fullest extent. In one instance where architects were suing for compensation, they offered proof by a contractor as an expert witness of a custom that the employment to make plans for a building carried with it an employment to superintend the construction. The trial justice refused to accept such testimony, but on appeal the case was reversed on the ground that a contractor, if anybody, would be sure to know of any such custom, and hence his testimony should have been received.

When it comes to purely expert testimony or the answering of hypothetical questions, the expert witness will be found to testify in the usual case more or less immediately and exclusively from his reading, that is, from statements in modern treatises. The additional elements of proof which the experienced witness would supply are as to personal experience and as to the technical or professional standing of the treatise itself. The late decisions show a liberal attitude in receiving technical testimony based on professional reading. In the course of the cross-examination the expert witness must expect to show his reasoning supporting his judgment and opinion given on his direct examination. The latest text-book states: "Conjecture and speculation of the expert will be excluded. His judgment must be something more than a guess. The field of the expert is one of theory and hypothesis. He deals with the future, the unobservable, the remote. His task is to explain, to foresee, to reconcile things apparently in conflict. Yet the expert is no more entitled to give an absolute guess than any other witness would be. His conjecture pure and simple has no place in judicial administration. The expert can declare only what he sees in the facts detailed to him. His special knowledge, more carefully trained mental process and the like, confer upon him the ability to see more in the facts than other people do. This may make him peculiarly useful to the jury, but his usefulness ceases where his guessing begins."

The expert witness has been the subject of a great deal of discussion in late years. The fact that he is paid by the party for whom he is testifying only makes him, to a greater or less extent, a partisan of his employer. The conduct and testimony of certain experts have also given this class of witnesses little or no standing in many courts. In fact, with the policy now of most experts to accept retainers, it often becomes merely a question as to which party has the most money and can afford to retain the most prominent experts. It is commonly rumored that an expert can be paid to testify to anything, and such a reputation is not conducive to belief in the statements of any expert by either judge or jury. Many recommendations have been made to correct the present evils in this regard; the chief one being that when an expert is needed he should be employed by the court, similarly as the interpreter is to-day, and why not? What distinction is there between an interpreter of a language and a scientific interpreter of the results of certain data or facts? One text-book in upholding experts states that they did not deserve their present disrepute, as they were no worse than the ordinary everyday witness. While that may be an excuse, it is a suspicious comment on the veracity of witnesses in this country. Until some change is made in the method of employing experts, it is especially important for the architect and all other expert witnesses to live up to the honor and dignity of their profession, and in this way attempt to modify and better their present unpleasant reputation in this regard.

The Lighting of Public and Semi-Public Buildings.

FOURTH PAPER.

ACCOMPANIED BY A SERIES OF ILLUSTRATIONS SHOWING SPECIFIC LIGHTING INSTALLATIONS.

BY L. B. MARKS,
Consulting Illuminating Engineer, New York City.

AUDITORIUMS, ASSEMBLY HALLS, AND ARMORIES. In all places where public gatherings are held no unshaded lamp should be placed within the view of the audience. The practice of lighting public places with lamps within the field of view is unfortunately still quite common and cannot be too severely condemned, as there is no excuse for such an abuse of the eyes of the public. Well designed lighting installations, for the illumination of auditoriums, assembly halls, armories, etc., can be carried out by direct, indirect, or semi-indirect lighting, the choice of the system of illumination depending upon the particular conditions to be met. In general, a direct lighting system with proper reflectors and shades is best suited to meet extreme conditions of ceiling height.

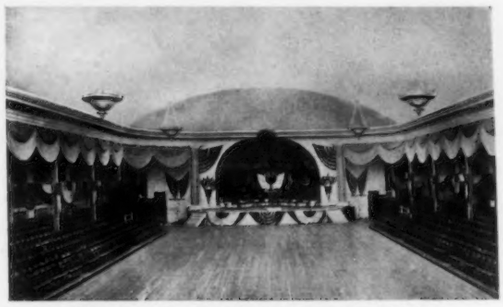


FIG. XXIV. STEEL PIER AUDITORIUM, ATLANTIC CITY, N. J.

THE above illustration shows a large auditorium at Atlantic City, illuminated by indirect lighting. This auditorium is used for conventions, exhibitions, dancing, and musicales. The data relating to installation are as follows:

Dimensions of Auditorium .....16,100 sq. ft.
Ceiling Height: 38 ft. 8 ins. at center; 27 ft. at sides.
Outlets 7
Watts, 12,000....Watts per sq. ft. 0.75
Average Foot-candles 2
Distance, Lamp to Ceiling....72 ins.

NOTE.—Each of the six fixtures contains 20-100 watt tungsten lamps backed by silvered mirror reflectors, and housed in a composition opaque bowl 64 ins. in diameter.

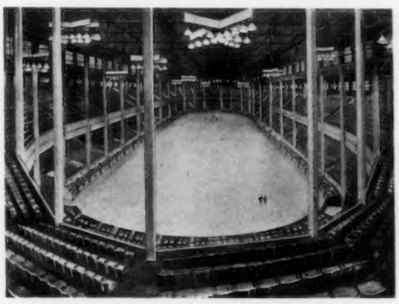


FIG. XXV. DIRECT LIGHTING IN ST. LOUIS COLISEUM.

THE auditorium shown below seats upwards of 3,000 people, and is illuminated by direct lighting fixtures. Each of the large central lighting fixtures contains eight art glass octagonal domes housing lamps backed by distributing prismatic reflectors.

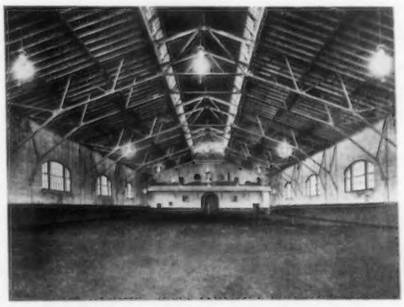


FIG. XXVI. GAS ILLUMINATION IN PHILADELPHIA ARMORY.

THE floor area above illuminated by direct lighting is 250 ft. x 325 ft. and the lighting equipment consists of 1,000 lamps backed by satin finished prismatic reflectors.

FIG. XXVII. DIRECT LIGHTING INSTALLATION AT GREAT HALL, COLLEGE OF THE CITY OF NEW YORK.

THE above illustration shows the illumination of an armory by gas arcs having five burners each. The method of ignition is by pilot flame.

FIG. XXIX shows a night view of the auditorium of the Allegheny County Soldiers' Memorial, Pittsburgh, Pa., which is illuminated by mercury-vapor lamps, nitrogen-vapor tubes, carbon and tungsten incandescent lamps. A complete description of this installation is given by Mr. Bassett Jones, Jr., in the Transactions of the Illuminating Engineering Society, Vol. 6, 1911, from which the following excerpts are taken:

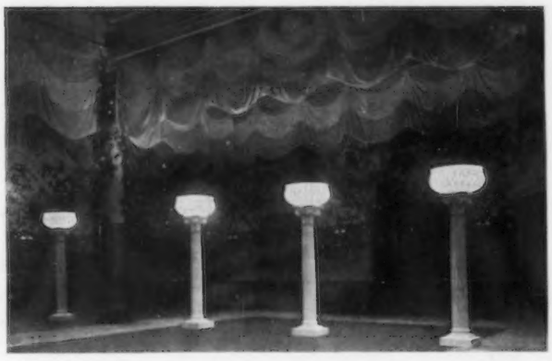


FIG. XXVIII. SPECIAL SEMI-INDIRECT GAS LIGHTING INSTALLATION AT TAFT HALL, AUDITORIUM ARMORY, ATLANTA, GA.

THIS illustration shows a special gas lighting installation in Taft Hall, Auditorium Armory, Atlanta, to provide special lighting for an automobile show and a gas convention held in the building. The entire installation was carried out by semi-indirect lighting from floor standards, the design contemplating a 50 per cent indirect component of the light, that is to say about half the light was directed to the ceiling to secure better diffusion. The room is approximately 75 feet square and is provided with ten lighting units, each consisting of fifteen upright standard mantle gas lamps.

The view of the ceiling, which is the principal architectural feature of this room, could not be obstructed and hence in any case the use of hanging fixtures had to be avoided. The treatment of the ceiling centers around the light centers, which are also architectural centers when the room is lighted by daylight from without. These nine centers consist of circular panels of rich pierced plaster ornament, above each of which are suspended two 18-ampere flame arc lamps,* so located and equipped as to cause the plaster lines to stand out in bold relief against a brilliant flickering background. The general effect is that of a scintillating jewel of intricate pattern. One of these circular panels forms the central feature of each of the large panels into which the entire ceiling is divided by the deep beam soffits under the steel trusses supporting the floor above.

A group of glass sashes is arranged around each of the flame arc panels and forms a design of geometrical surfaces broken up into small figures by the sash frames. A box reflector is placed over each sash.

Each of the main rectangular panels, consisting of a flame arc center and its group of sashes, is framed by a concealed nitrogen vapor tube lamp provided with a reflector that projects the light through a slot entirely surrounding the panel. Each panel is thus bordered by a band of rose-colored light.

The ornamental plaster mullions separating the sashes in each panel are provided with plaster rosettes equipped with exposed incandescent lamps employed to accent architectural features and show off the elaborate decorative treatment of the plaster work.

Glass panels are located close to the side walls, one over each window, and over each is provided a parabolic reflector containing a 400-watt mercury arc. The light from these lamps is directed against the walls of the room and through the windows and is so modified by the glass in the panels as to acquire a pale sky blue tone.

No one who has not seen this room lighted can imagine the grandeur of the effects, both from the interior and the exterior of the building. As one approaches the building from without, the glory of the ceiling is seen only through the streams of light flooding from the windows between the columns of the majestic façade. The full splendor of the interior is perfectly set off by the artificial light. The wonderful color treatment of the walls receives a new interpretation, becoming soft and rich in the flood of golden light that is thrown upon it. Each of the large panels seems to be suspended free in the space marked out for it by the beam soffits, while the entire ceiling is apparently framed by a border of soft moonlight.

The lighting of the auditorium is controlled by switching devices in a closet off the stage so that any feature of the lighting may be turned on or off at will. It is intended that either the light from the glass sashes or the light from the exposed lamps under the ceiling will be sufficient for ordinary purposes, while the entire lighting system will be used only on special occasions. As a matter of fact the illumination has proved so popular as an exhibition in itself that it has been featured on every occasion, the audience usually remaining to view the various effects.

The cost of installing the auditorium lighting was remarkably low, as the cost of fixtures appropriate for lighting this immense room would have almost equaled the cost of the present illuminating equipment of the entire building.

The nitrogen-vapor tube lamps, mercury arcs, and flame arc lamps are used solely for effect, efficiency not being considered, since the particular effects desired could not be obtained in any other way.

Frosted-tip tungsten lamps were first used in the rosettes under the ceiling, but the great intrinsic brilliancy and excessive whiteness of the light from these lamps when contrasted with the generally soft yellow tone of the rest of the illumination produced unfortunate results, and with the exception of the center lamp in each group, they were replaced with 8 candle-power frosted-bulb carbon-filament lamps.

Thirty different effects can be obtained in the lighting of this ceiling, fourteen of which are really beautiful. The most interesting series of color changes is obtained by starting with the mercury arcs alone, and adding the remainder of the illuminants in the order following: (1) Nitrogen vapor lamps; (2) flame arcs; (3) sashes; (4) exposed incandescents. The most remarkable effect is obtained by using only the nitrogen-vapor lamps and flame arc lamps. The ceiling then appears like a huge decorative grate above which great fires are burning. The maximum intensity on the floor then reaches 0.7 foot-candle. Adding the mercury-vapor lamps to this combination does not change the illumination on the floor, due

* Since this paper was written the author has been advised that the use of flame arc lamps in this building has been abandoned and tungsten incandescent lamps substituted therefor.

FIG. XXIX. NIGHT VIEW OF AUDITORIUM, ILLUMINATED BY MERCURY VAPOR TUBES, NITROGEN VAPOR TUBES, CARBON AND TUNGSTEN LAMPS.

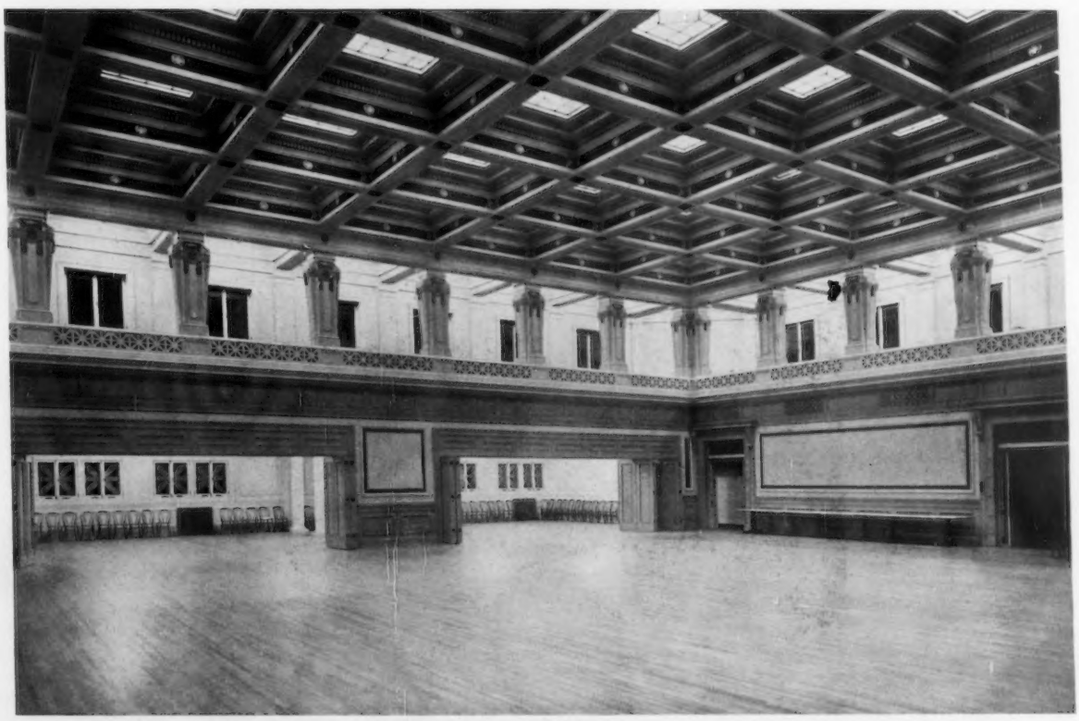


FIG. XXX. NIGHT VIEW OF BANQUET HALL AND BALLROOM, ILLUMINATED BY TUNGSTEN LAMPS, SCREENED BY AMBER SHADES.

ALLEGHENY COUNTY SOLDIERS' MEMORIAL, PITTSBURGH, PA.

to the form of the reflectors used with these lamps, but the effect produced is most weird and profoundly alters the color of the walls to a gray-blue. The light from the nitrogen-vapor lamps so completely detaches the panels from the ceiling that they appear actually to float in their frames and the slight flickering of the light that sometimes occurs, seems to set them moving.

There are two general color effects obtainable in the illumination of this room, each of which may be varied through several tones; these are rose-gold and silver-blue.

The maximum intensities of illumination on the floor for different combinations were as follows:

1. All lamps in use	3.82	foot-candles
2. Exposed incandescent lamps and sashes	3.10	,, ,,
3. Sashes only	1.46	,, ,,
4. Exposed incandescent lamps only	1.74	,, ,,
5. Nitrogen tubes only	0.40	,, ,,
6. Flaming arc lamps only	0.30	,, ,,

The above readings were taken directly after the work was completed and with a large amount of accumulated dust and dirt on the sashes. The results are therefore the worst that can be obtained, since once the sashes are cleaned the box reflectors will prevent any serious lowering of the intensity due to a similar cause. The loss due to dirt amounted to at least 20 per cent of the lamp flux.

Fig. XXX shows a night view of the banquet hall and ballroom of the same building, illuminated by tungsten lamps screened by amber colored shades. There are forty-nine glass sashes in the banquet hall ceiling, each sash forming the top of a ceiling coffer. The area of each sash is 25 square feet, from which ten per cent should be deducted for sash bars and mullions, leaving 22.5 square feet net glass area per sash — a total glass area of 1,100 square feet. Above each sash is a box reflector similar to those used over the sashes in the auditorium ceiling. Each reflector contains eight 40-watt clear-bulb 112-volt tungsten lamps.

Mr. Henry Hornbostel, one of the architects of the Allegheny County Soldiers' Memorial, comments on the illumination features as follows:

"It is very curious to realize that illumination of buildings nowadays may be, and often should be, different from the illumination of buildings, say thirty or forty years ago. Then it was a question of merely getting light. To-day it is not so much a question of merely getting light as it is a question of getting a charming, fascinating, pretty, and useful light. Yet it is a very curious fact that the old tradition, or the spirit of imitation, or the spirit of custom, still shows itself in the work of a great number of our illuminating engineers and architects. The old-fashioned idea still clings to us and the new conception of things is taken up in a rather hesitating way.

"Illumination to-day is like painting; it is like decorating a wall. Some time ago walls were so constructed as to make them warm. To-day the walls are so decorated as to make them beautiful. The same tendency is or should be true of illumination. To-day one should illuminate his room so as to make it charming, so that the complexion looks flattering, especially the case of rooms used for festive purposes. It is noteworthy that in the homes the little standing lamp, with a little shade over it, is coming more and more into prominence. The reason is that this type of lighting device makes a person look best. It makes everybody in the home look pleasant and charming. A person does not care whether it is or is not efficient, or whether its radiance is very intense or not, or widely distributed, for if he wants to read a book he goes to the little lamp and reads there. Thus, the tendency to flood everything with light, that showed itself shortly after the cheap use of the electric light was discovered, so that every interior was a-glare with unnecessary light, that made one decidedly uncomfortable when he first entered from the dark streets, has been gradually overcome by common sense and good taste. Such over-lighted interiors can never be made to feel homelike. They have, in fact, a curious psychological effect — they produce a nervous excitement that makes a person desire to screech and dance and amuse himself in a way that will release a maximum of nervous energy. Most interiors should, in fact, appear homelike, and must be lighted so that they will so appear. On the other hand, the interior that is to be used for amusement must be considered solely from the point of view of the use to which it will be put, and lighted appropriately. One does not want to listen to fine music in a gay ballroom, nor does he feel like dancing in a church. Economy from the viewpoint of illumination can have but a very minor place in the study of such cases. The ballroom, for instance, is a place where people go to have a good time. It is a luxury, and no place for the practice of economy; it must be lighted in the best way, so as to make it cheerful and bright and joyous; and efficiency as an illuminator must be measured by such results, and not at all on the basis of cost per night to operate. The value of the installation is then solely in the fact that everybody enjoys dancing in that room. In fact, the proprietor simply says, 'Go on and spend as much as you want, as long as I can get customers.' That is modern economy. That is the spirit of the times.

"But brilliancy is not the only scale to play upon. There is also the use of colored lights to be considered, and here is a field that possesses almost unlimited possibilities. One can do with colored lights almost anything he wishes. They may be used as a painter uses his tones and tints in decorating an interior. A person can decorate a room in colored lights and make it ridiculous, and again he can make it dignified. He can use colored lights in the scheme of decoration so as to accent a religious note, or he can do exactly the opposite. It is like working different tones into a painting, and, in fact, he is doing far more than merely lighting the room, he is producing effects that will be pleasant at night time and may add decidedly to its charm and beauty."

FIG. XXXI. GAS LIGHTING INSTALLATION. EVANGELICAL CHURCH OF THE HOLY COMMUNION, PHILADELPHIA, PA.

THIS illustration shows a gas lighting installation in which reflex burners are used, controlled by a main cock at the rear of the church. The gas in these fixtures is ignited by torch. The pulpit is illuminated by lamps, located behind the pillars, and controlled by an independent pilot line and main cock.

The illuminating engineer should co-operate with the architect to produce the desired lighting result in the most economical and effective manner.

CHURCHES.

THE old-time feeling that the interior of a church should be illuminated by "a dim religious light" seems to be giving way in modern times to the feeling that the interior should be well lighted, that is to say, sufficiently well lighted to permit of reading a prayer book with ease. There is also a growing feeling that the lighting should be such as to display to the best advantage the architectural features of the interior and to secure such beauty as may be afforded by a suitably illuminated color scheme of decoration.

The ancient temples were sometimes placed and their windows so arranged that the sun's rays centered on the altar. The custom still survives in many modern churches, by bringing the chancel out in strong relief by means of well-planned day and artificial lighting.

Specially designed reflectors can be easily concealed behind the sanctuary piers or around the tympanum of the arch, thus flooding the altar or pulpit with light, without the source of light being visible to the congregation.

If the reflectors are not properly designed to produce an even tone of light, a very spotty and unsatisfactory illumination will result. In some cases the lighting effect can be improved by the use of electric dimmers, by which the intensity of the illumination can be regulated at will.

Where the height of the chancel warrants, the reflectors can be arranged to raise and lower, thus making it easy for an attendant to clean them and replace burned-out lamps.

Fig. XXXVI, on the next page, shows the auditorium ceiling in the Ansche Chesed Temple, New York City,

FIG. XXXII. DIRECT LIGHTING IN ST. LAWRENCE CATHOLIC CHURCH, CINCINNATI, OHIO.

THIS illustration shows the interior of a church formerly illuminated by lamps on standards mounted on the pews, but which is now lighted by a system of general illumination from lamps located near the ceiling. The following data apply to this installation: Ceiling Height of Main Aisle, 60 ft.; of Side Aisles, 30 ft. Dimensions.....70 ft. x 140 ft. Outlets .....22 Fixtures: 7 5-light (100-watt lamps) over center aisle; 7 4-light (60-watt lamps) over each side aisle; 1 4-light (60-watt lamps) under the gallery. Watts, 7,100; per sq. ft., 0.73. Distance, Lamp to Ceiling, 1 ft. 6 ins.

NOTE.—Prismatic reflectors used throughout.

FIG. XXXIII. DIRECT LIGHTING INSTALLATION IN CHURCH AT SEWICKLEY, PA.

A DIFFUSED direct lighting installation where the lighting fixture consists of a single acorn shaped pendent globe which houses an electric lamp. The glassware is sufficiently dense to hide the view of the glowing lamp filament and to secure an even and soft illumination.

FIG. XXXIV. INDIRECT LIGHTING IN EBERHARDT MEMORIAL CHURCH.

Ceiling Height, 40 ft. Dimen., 5,600 sq. ft. Outlets.....7 Fixture..... Gothic Watts, 5,600....Watts per square foot, 1.0 Average Foot-candles.....2.5 Ceiling and Wall Tint.....Flat White Distance to Ceiling .....78 ins.

NOTE.—Six fixtures hang 78 ins., 1 fixture hangs 52 ins.: 1 center fixture, 16 150-watts; nave 2 fixtures, 5 100-watts each; transept 2 fixtures, 4 150-watts each; rear gallery 4 100-watts; over pulpit 4 150-watts.

FIG. XXXV. NIGHT VIEW OF ST. ALOYSIUS CHURCH, SPOKANE, WASH.

A NIGHT view of a church interior, showing concealed lighting from coves combined with diffused lighting through a glazed opening in the dome.

FIG. XXXVI. ILLUMINATED COLORED SKYLIGHT, ANSCHE CHESED TEMPLE, NEW YORK CITY.

containing a skylight glazed in an harmonious combination of rich colors, the prevailing tint of which is golden amber, supplemented by several colors, mainly shades of green and red. This skylight is lighted by thirty-six 100-watt tungsten lamps backed by concentrating reflectors and mounted 5 feet above the glass between the latter and the roof. The skylight is approximately 50 feet long by 20 feet wide, and 45 feet above the auditorium floor. The interior finish of the walls is light buff, the furniture and trimmings unpolished oak, and the hangings in the chancel and choir dark red.

The underlying idea of the illumination is to appeal to the emotions and particularly the religious feeling, and to this end the decorative scheme and scriptural motives of the panels represent the majesty of the law and the spirit and strength of the Almighty. The Talmud or book of the Ten Commandments, surmounted by the six-pointed star, is seen above the griffins in the central panel. A golden light radiates from this point, merging into tints of orange, blue-green, and red, the extreme border being deep red. In another panel is seen the inscription on the scroll. The only use to which the sparkling or jewel effect is put is in the central ornament to indicate the radiance of light. The theme of the illuminated ceiling is a conception most fitting for an edifice of this character, and the general effect of the illumination is inspiring.

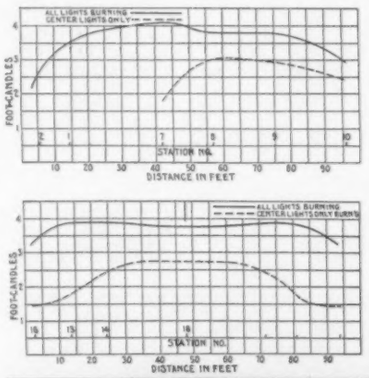
Fig. XXXVIII shows the interior of the Church of Christ, Scientist, Chicago. This installation is described by Mr. H. B. Wheeler * as follows:

The area under the dome is 60 feet by 60 feet with the ceiling 50 feet high at the center. Each side arch is 16 feet by 60 feet; the ceiling is 30 feet high to the center of the arch. Two rear arches, not shown in this picture, are 40 feet by 60 feet with ceilings 28 and 24 feet high.

The decorations throughout the auditorium are light, the ceiling being an ivory white and the walls a cream color. The pews are of dark birch and the furnishings, rugs, etc., are dark green.

The center fixture contains twenty 250-watt tungsten lamps equipped with concentrating reflectors. The tops of the reflectors are 12 feet from the ceiling. This fixture is one of the largest indirect units that has ever been installed. It measures 7 feet 6 inches in diameter and 36 inches in depth. It weighs 800 pounds. It is lowered for cleaning by means of a windlass. Three smaller indirect fixtures hang under each side arch. Each fixture contains five 100-watt tungsten lamps equipped with concentrating reflectors. Suspended from each of the two rear arches are three other indirect fixtures. Each of these fixtures is equipped with six 100-watt tungsten lamps fitted with concentrating reflectors like those used in the side units.

The glass blanks of reflectors are of one piece, plated with pure silver.



*Trans. Illum. Eng. Soc., May, 1912.

THE results of illumination tests (readings on horizontal plane 30 ins. above floor) are shown in the curves, at the left. The curves in the upper chart show the intensity of illumination over a longitudinal section of the auditorium and the curves in the lower chart show the intensity over a transverse section. With all lamps in service, the following data apply:

Average Foot-candle Intensity 3.0
Watts per square foot 1.45

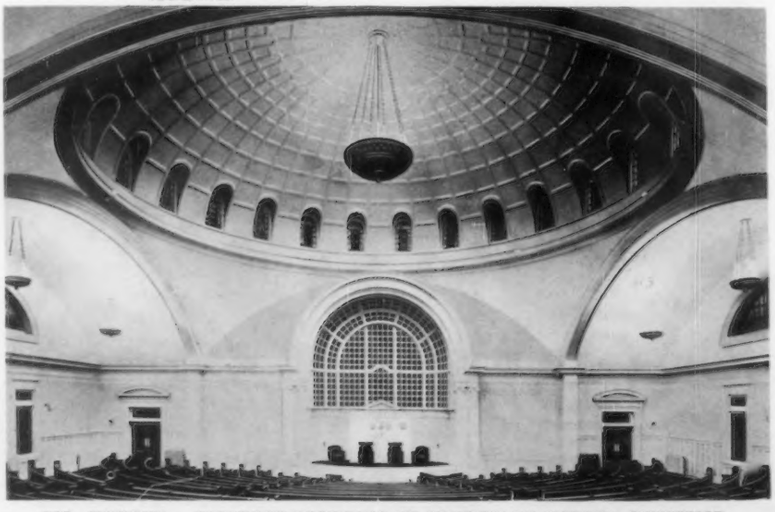


FIG. XXXVIII. INDIRECT LIGHTING IN CHURCH OF CHRIST, SCIENTIST, CHICAGO, ILL.

The Quantity Surveyor.

HIS WORK UNDER THE ENGLISH SYSTEM COMPARED WITH THE WORK OF THE CONTRACTOR'S ESTIMATOR IN AMERICA.

BY LESLIE H. ALLEN.

IN the interesting article by Mr. Jones in the October issue of THE BRICKBUILDER there are many important points dealing with the merits and demerits of the English system of quantity surveying, but in reading through these there does not seem to be a clear idea in the mind of the writer as to exactly what a quantity surveyor does, his methods and professional standing, and the advantages and disadvantages of the way in which bids are obtained in England, compared with the methods in vogue in this country. It is the purpose, therefore, of this article to set forth a concise account of the manner in which quantities are taken out and bids are made up in England, and the comparative benefits and drawbacks of the English and American systems of obtaining competitive lump sum bids for building construction contracts.

The English quantity surveyor is usually a man in independent practice who takes off quantities for a number of architects, receiving commissions from them in a similar way to that in which they receive their instructions from the owners. As soon as the architect's plans are finished he hands them over to the quantity surveyor, who proceeds to scale from the plans the quantities of material and labor in much the same way as a contractor's estimator might do here, with the difference that he is able to give his whole time to the work in hand and work more carefully and has more time to make a careful and detailed estimate. Also, being paid for his work, he is able to have all his figures carefully checked. In this country, where contractors cannot give their whole time to estimating, they have to work so quickly that there is no time for any but the most superficial checking of the quantities, and many contractors are only able to check their estimates by the square foot or cube foot price of the building, which is, as all will agree, a very unreliable method of checking.

It is the quantity surveyor's duty to take off the whole job and not confine himself to a few trades, and leave subcontractors to figure out the rest. An English bill of quantities will contain separate schedules for mason work, earthwork, concrete work, structural carpenter work, finished carpentry, hardware, plastering, plumbing, painting, ornamental ironwork, and so on, and the quantity surveyor has to be a man of sufficient technical education and training to know enough about all these trades to be able to take off quantities for them in the way in which various contractors and sub-contractors wish to have them, in order to price them correctly. It is the aim of the quantity surveyor to take off and describe the items in just the way that will be of most service to the contractor, and to give such information in the schedules as will be clear to him. Every surveyor works on the same methods, measuring all work net, deducting openings in brickwork, carpenter work and plastering, etc., measuring forms separately from concrete work, and in general giving items in detail.

The quantity surveyor gives his whole time to this work and is in consultation with the architect continually. It is much easier for him to straighten out difficulties and points not clear than it is for the estimator, and he is able to discover and point out inaccuracies in the plans which do occur even in the plans of the most careful architects, and is able to suggest amendments to the specifications where they are deficient in description or ambiguous in meaning.

Some American architects make a practice of furnishing rough quantities for the guidance of the contractor, but up to the present the writer has not found any which were of any real use to him because in the first place there is no attempt to insure absolute accuracy, and in the second place the way in which they are taken has not been a way in which he has to price them. For instance, footing excavation and trench work cost more than work which can be got out with a steam shovel, but often architects do not seem to realize this distinction and keep it separate in their schedules. Again, the cost of forms for concrete work bears no relation whatever to the number of cubic yards of concrete and needs to be taken off as a separate item in square feet, and yet no architects do this. Many other instances might be cited. The first requisite of a uniform bill of quantities is that it should set out just the items that every contractor would be figuring out himself. If not, the contractor has to do a lot of supplementary work in analyzing and subdividing the items furnished to him. Of course, in making these subdivisions, some contractors go into more detail than others, and the quantity surveyor, in order to suit all parties, has to go into as much detail as the most careful of the contractors who are working on his quantities. The items which the other contractors consider superfluous would of course be disregarded by them and the price of the larger items adjusted accordingly.

Although I think very few contractors will join with Mr. Jones in his very sweeping condemnation of the business methods of the present generation of architects, I think all will agree that even in the best plans and specifications there are sometimes ambiguities and difficulties of interpretation which arise. I find in my own work that the plans put out for bidding on most of the big office and factory construction built in the Eastern States are exceedingly good and clear, but I think that architects do not realize that in asking for a bid to be made in a week or ten days they are expecting a contractor's estimator to make himself absolutely master of the plans which it has taken three or four men in the architect's office weeks or months to prepare. Of course, by the time the plans are sent out the architect knows every line on them and can almost see the finished building in his mind's eye. But the contractor's estimator cannot in the short time given him grasp the meaning of the plans so clearly; a moment's reflection will show that this is impossible, and I think that it is really not fair to contractors to expect them to

risk the large sums of money that present-day contracts amount to on the accuracy of the survey made by them in the short time that is allowed them to make up their bids. It must be remembered that they do not even have the full time for their own work that architects allow, as under present-day conditions they have to call in twenty or thirty or more sub-contractors to figure on various parts of the work and make up sub-bids to incorporate with their bids. It is often the experience of the contractor's estimator that he does not get a chance to look at the plans during the day and has to work on into the night over the plans to get his estimate done.

To return to the English quantity surveyor. When he has finished his taking off, the items of his estimate are collected and sorted and brought into schedule form. A separate schedule or bill is made out for each trade, these are bound up together and the requisite number of copies is typewritten or lithographed and sent out to the general contractors who are invited to tender. The schedules contain sufficient description for the contractor to understand fully what the items are that he has to price, and he does not need to spend much time going over plans and specifications. In the writer's practice in England he found it a rare thing for any builder to spend more than a half an hour looking over the plans, as all the information he needed was in the quantities. When a contractor receives the schedule of quantities he prices all the items in the trades that he himself proposes to execute or which he is competent to price, and the schedules of items which he intends to sublet he passes out to sub-contractors to price on the same lines that he does. When the pricing is completed and extended the totals of the various schedules are collected and profit and incidentals added, and the bid is ready to be put in.

The methods of measurement used by quantity surveyors are the same in every case and are regulated by textbooks and governing bodies. There are two professional societies having headquarters in London which regulate these matters. The contractor reading any item in a bill knows exactly what it means, as the textbooks, which all are familiar with, define exactly how the work in each trade should be measured.

Before the science of quantity surveying gets very far in this country something of the same sort will have to be done here, as at present there is an astonishing variation in the practice of the different architects, engineers, and contractors. One society, the American Concrete Institute, having realized this, has carefully studied the subject of standardization of measurements as far as it relates to their particular field, and the result of the work of a committee appointed by them, to which the writer had the honor to belong, is embodied in the report and rules adopted by them at their last convention. These appeared in the engineering papers and are probably familiar to all.

It will be seen that the operation of making up an estimate is not such a formidable matter for an English contractor as it is for an American contractor, and owing to this fact he does not feel aggrieved if he has to bid in competition against a large number of others. In this country there are not many of the higher grade of general contractors who would care to bid in competition against more than six or eight others, as, if the field is enlarged to fifteen or twenty, he feels that his chances of getting the job are diminishing in inverse ratio and he is very disinclined to put any time and trouble into the making of an estimate against a number of others. In a case where he simply has to price, he can do this more quickly and does not mind so much competing against a large field. This is an obvious advantage to the architect or owner.

The question will arise as to how much this service will cost and what guarantee there is of the accuracy of the quantity surveyor's work. In the first place, as to the cost, the quantity surveyor's fees are arranged on a sliding scale ranging from two and one half per cent on dwelling houses and buildings of an intricate nature in which a good deal of work is involved, down to one and one quarter per cent on large factory and mill construction. At first sight this may seem to be a good deal to those to whom the system is new, but a moment's reflection will show that estimates cost just as much as this in this country. An estimate for a $100,000 building will cost each general contractor at least $100 to make, and in addition to this there would be the time and expense put in by at least fifty or sixty sub-contractors, some of whom come in from outside the city to figure. Supposing there were ten general contractors figuring on a job, the total cost of the estimate on a $100,000 job to the building trades would be at least $1,500 and might run to as much as $2,500, and this has eventually to come out of the pockets of the building owners, for although he may not pay out this sum on his own building he is really paying it out in another way in the increased overhead charges which contractors have to add to their estimates to recoup them for the expense of a permanent estimating staff. If contractors were relieved of this overhead expense they could afford to reduce their gross profits and the burden of the expense of any estimate would fall where it belongs, that is, on the shoulders of the man who is paying for the building.

Now as to the accuracy of the work, this is a matter which gives very little trouble or discussion in England. Quantities are treated in one of two different ways. One is to make the quantities a part of the contract, that is to say, the contractor whose bid is accepted signs a contract to build a building as shown on the plans and specifications, having the quantities of material and labor described in the bill of quantities. Then if any item in the quantities is in excess or is less than the amount actually required in the building, the difference is measured and adjusted. The other way is to let the contract based on the plans and specifications only, and in that case the quantity surveyor has to guarantee that his work is accurate. Although at first sight it would seem that this was too much of a risk to take for such a small fee, yet in practice it does not seem to have worked any hardship as cases are extremely rare where any mistake is found that would call for the guarantee to be made good. The quantity surveyor, being in constant practice, is naturally more expert than a man who works at it intermittently, and as he is able to afford to have all his work checked carefully, the chances of error are small. It does not seem strange to contractors or engineers that they are not asked to guarantee that their buildings will not fall down, and yet there is no more risk of a quantity surveyor making a deficient estimate than there is of an engineer making a faulty design. The question of accuracy and guarantee, therefore, does not seem to be a very important one. It is one

that will take care of itself. If a quantity surveyor has to depend for his professional reputation and standing on the accuracy of the work he does, there is no more chance of his doing careless and inaccurate work than there is of the architect or engineer whose standing depends on the quality or permanence of the work he designs, or there is of the contractor whose reputation depends on the quality of the workmanship he furnishes. In any case, with or without guarantee, his work is much more likely to be accurate than that of the contractor's estimator, owing to the better conditions under which he works.

Another great advantage in the use of quantities is in the settlement and adjustment of extras and variations. This is always a sore point between architects and contractors. On the one hand, there are not many architects who are familiar enough with unit prices to be able to value extra work properly and they do not realize how much changes and extras add to the cost of a building. The cost of a small change is often out of all proportion to the results gained. So the contractor's price for extra work always looks high to the architect and he often feels that the owner is being plundered. On the other hand, there is no question that sometimes contractors do charge more for extra work and variation work than they are justified in doing. The reason for these troubles is that there is no basis on which extras can be fairly adjusted. This basis is provided by the quantities, for the English contractor is required to deposit with the architect when he signs contract a copy of the quantity surveyor's complete schedule with his unit prices attached to every item therein, and then when changes are ordered the contractor simply goes ahead and makes the changes and the quantity surveyor measures the extra work afterwards and prices it at the rates which the contractor has put into his priced schedule. The suggestion of Mr. Jones that these variations should carry a differential of ten per cent is a new one to the writer and is never done in England. A better way is to measure and price the work according to the schedule and then, if the contractor suffers any hardship by reason of having bought material that he has not been able to use through work being omitted, to make him a suitable allowance for this.

Contractors sometimes object to making their unit prices public in this way, on the ground that prices are a trade secret. This old idea is rapidly passing. My own firm has never lost anything by being always ready to give information on the unit prices of their buildings, and it is my belief that it will never hurt any honest contractor to divulge his unit prices. Contractors have to do it on unit price contracts, so why shouldn't they do it at other times?

The priced schedule also furnishes a definite basis for the monthly estimate for payment, which is often in this country a source of dispute.

The question of payment by the owner or contractor, discussed with such earnestness by Mr. Jones, is not an essential feature of the quantity surveying system and need not trouble us here at all. Of course, the logical person to pay the bill is the owner, and when quantity surveying comes into operation here he will undoubtedly do so.

I should like to call attention to the formation of the American Institute of Quantity Surveyors, having offices at 571 California street, San Francisco. The president of this association, Mr. G. A. Wright, has been working on this subject for over twenty years in a preliminary way, and an association has now been established and organized with a view to pushing this movement. The secretary would welcome any correspondence on this subject.

No millennium is yet in sight, even if fully qualified quantity surveyors were to spring up at once and start work in every city. The architects' plans will be as good or as bad as at present; the inexperienced contractor and the fraudulent builder will still be with us; competition will be just as keen; architects who are unfair to contractors will still be unfair; those who are fair now will not become lenient. But what the establishment of quantity surveying will do will be to place bidders on a more equal footing when estimating and insure a square deal all round. We try to give and get this now. We want to do so all the time. I believe that quantity surveying will be a real help to this end.

Speaking from the contractor's side, I feel that our thanks are due to Mr. Jones for the thoughtful way he has dealt with the subject, even if I cannot agree with his denunciation of architects in general or his rosy view of the good times he has in store for us. Having had my early training in an English quantity surveyor's office, I am well acquainted with the English system; and I have been long enough in contracting work in the United States to know the difficulties we labor under here, and any movement toward the establishment of better estimating methods has my hearty endorsement and support.

Editors, THE BRICKBUILDER:

Your attitude upon the quantity question is recognized and appreciated. To see an American standardized system of estimating upon bills of quantities, one that will supersede our gambling methods, has been my earnest desire since 1891, when my interest in this movement commenced. It was not, however, until 1905, that any definite steps were taken towards organizing a society for circulating practical information upon this subject. By April, 1906, the foundation for such a society was ready, but earthquake and fire in that month, disturbed the arrangements temporarily. The present American Institute of Quantity Surveyors is the outcome of that earlier conception. Local committees or councils have been formed, whilst others are in course of formation and contemplated for the purpose of encouraging better methods.

The classifications of membership are Regular, Associate, Honorary, and Student. Among the leaders in this movement are several professional quantity surveyors, some with long experience as such, in Europe, where the just principle of measure and value is largely followed with advantage. Architects, engineers, and contractors, who favor the adoption of better estimating methods are affiliating as associate members and founders of the Institute.

Such a system can readily be adapted to American needs and sentiment, although it may be advisable to eliminate certain features to meet our different conditions. Any system will be better than the guesswork gambling methods practised to-day, which favor only the incompetent, and cause most of the trouble upon building contracts.

G. ALEXANDER WRIGHT, *Architect.*

TUBERCULOSIS PAVILION

ADMINISTRATION BUILDING

Photos. Copyright by Wurts Bros. GENERAL VIEW LOOKING SOUTHEAST

THE MONTEFIORE HOME FOR CHRONIC INVALIDS

BUCHMAN & FOX AND ARNOLD W. BRUNNER, ASSOCIATE ARCHITECTS

The Montefiore Home for Chronic Invalids.

BOROUGH OF THE BRONX, NEW YORK CITY.

BUCHMAN & FOX AND ARNOLD W. BRUNNER, ASSOCIATE ARCHITECTS.

IT IS seldom that we see such effective group planning as that of The Montefiore Home for chronic invalids, where a number of very large buildings have been placed on a comparatively restricted area within the limits of New York City without a semblance of congestion apparent in any part. The site comprises about eight acres and its conformation is of a fortunate nature to lend itself admirably to the effective location of the various units. The administration building faces the north with the tuberculosis hospital on the south and the other buildings occupying positions on either side, all connected with enclosed corridors for convenient service and administration. The group consists of eight separate units, — the administration building, the home, the dining hall and service wing, the synagogue, the tuberculosis hospital, the surgical and medical departments, and the servants' home.

The entire group is designed in a free spirit of Georgian architecture with a general excellence pervading all the buildings, but if one were to be singled out as the best, the administration building would undoubtedly be considered the finest of the group. There is a singular absence of the usual cold and forbidding institutional character in the design of this building. The main façade has been conceived in a broad manner and indicates a wholesome hospitality and a welcome to the sufferer which too often lacks expression in the designs of many modern hospitals and institutional buildings.

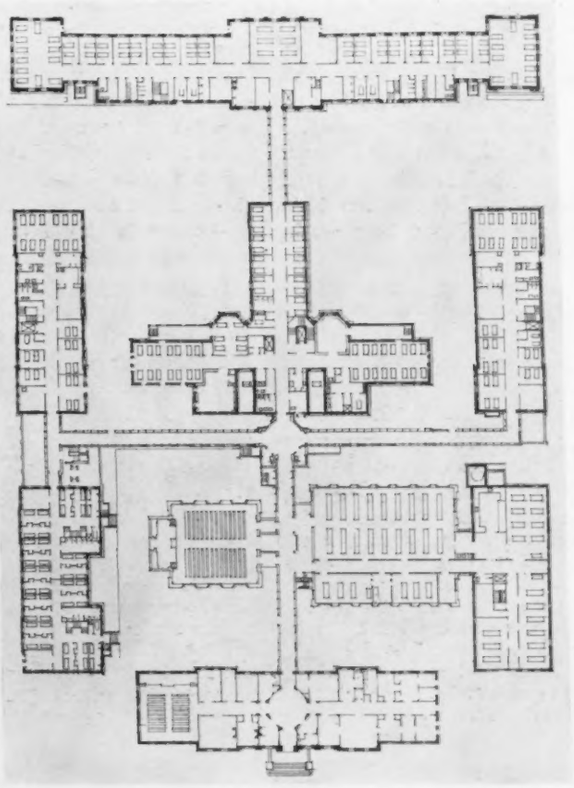
The center of the group at intersection of the main and transverse corridor is occupied by the home or dormitory pavilion, and in convenient proximity on either side of the main corridor are the synagogue and dining hall, directly in the rear of the administration building. This is an economic and convenient arrangement and the enclosed corridors make it comfortable for the patients who are not confined to their rooms to move about during inclement weather. The deck roofs of the corridors provide exceptional opportunity for the patients' outdoor exercise in pleasant weather. Some of the most pleasant views of the buildings are to be had from these corridors.

The pavilion for the tuberculosis patients is entirely separate from the remainder of the group save for a connecting corridor for service. This building has a long southern frontage with very large windows opening on to balconies at each of the two floors extending on either side of the central pavilion to the end wings. This building completely provides for the treatment and housing of the tuberculosis patients; the first floor contains a central dining room flanked, on either side, by wings containing private rooms for two patients each and at the ends by large terminal wards. The bedrooms and wards occupy the entire southern exposure, the north being utilized by bath rooms, service rooms, and the main corridor.

The buildings throughout are constructed of reinforced concrete columns and girders filled in with vitrified terra cotta blocks above grade. All of the façades including those fronting on the courts are faced with a rough textured brick in various shades with the trim and decorative features executed in architectural terra cotta of a pleasing gray color in perfect harmony with the brick.

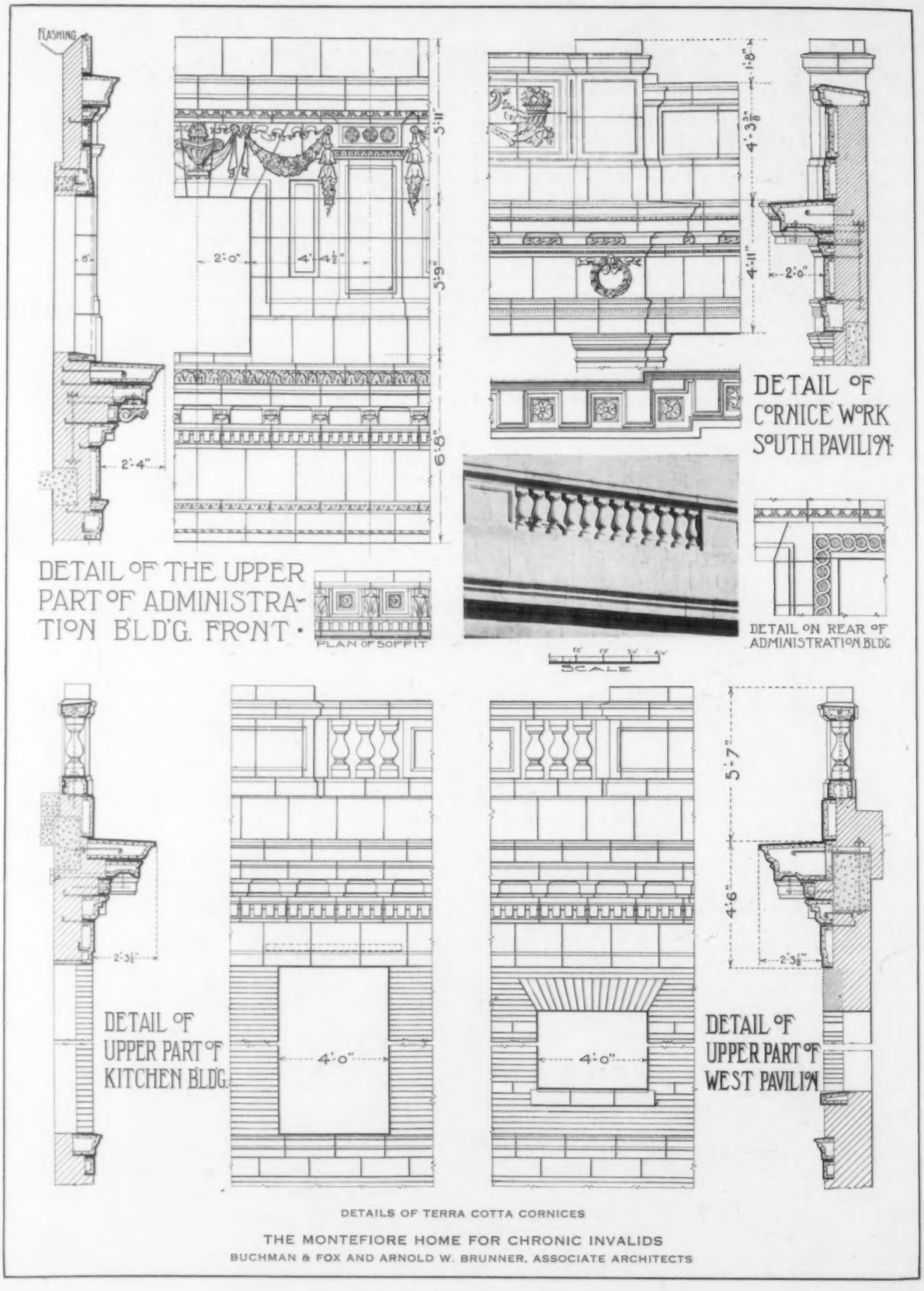
The buildings are simply designed brick structures with the decorative features confined to the cornices, belt courses, and window lintels, with the exception of the administration building, which is given a very much lighter and more graceful appearance by its refined proportions and the use of finely modeled terra cotta for its decorative detail. The broad pilasters with their bold Corinthian capitals executed in this material are very effective. The lunettes over the second story windows as well as the festoons and panels in the attic story are well designed and pleasing details. They indicate in an effective manner the versatility of terra cotta for fine decorative purposes and show its special aptitude for reproducing the conceptions of the sculptor and modeler.

The entire group portrays the last word in hospital construction and equipment for the treatment of chronic diseases as well as the housing of the poor and destitute and as such it will undoubtedly prove to be a model for similar institutions for some time to come.



GROUP PLAN.

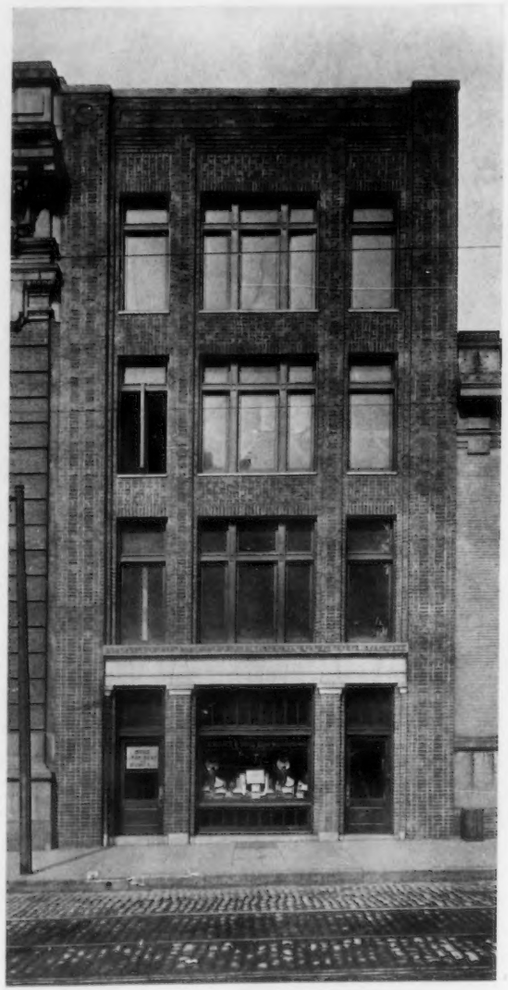
THE MONTEFIORE HOME FOR CHRONIC INVALIDS.
Buchman & Fox and Arnold W. Brunner, Associate Architects.



DETAILS OF TERRA COTTA CORNICES

THE MONTEFIORE HOME FOR CHRONIC INVALIDS

BUCHMAN & FOX AND ARNOLD W. BRUNNER, ASSOCIATE ARCHITECTS

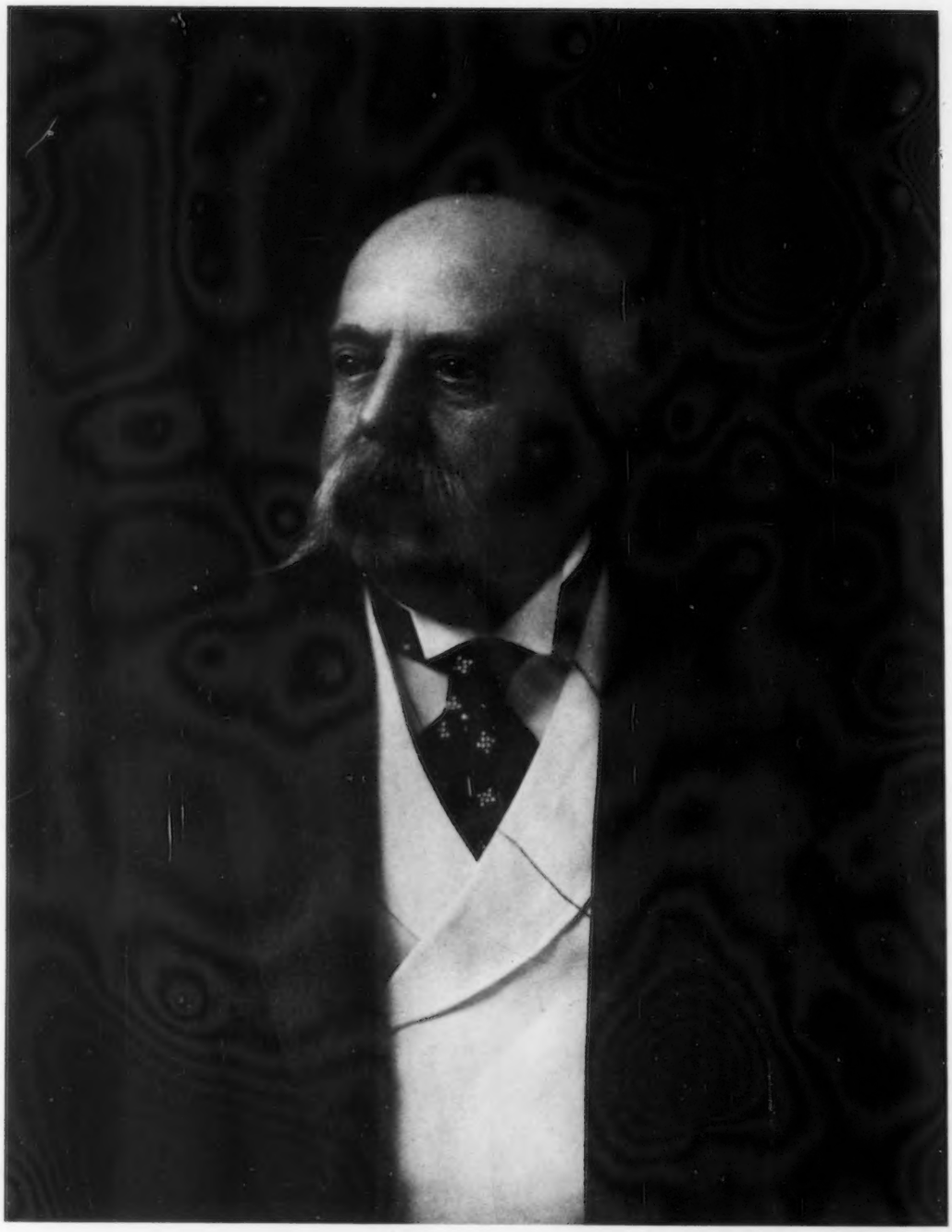


MERCANTILE BUILDING, BALTIMORE, MD.
J. HARRY AND F. J. THUMAN, ARCHITECTS

WELLNER BUILDING, PHILADELPHIA, PA.
HENRY L. REINHOLD, ARCHITECT

CHITTENDEN COUNTY TRUST BUILDING, BURLINGTON, VT.
W. R. B. WILLCOX ARCHITECT

GROUP OF SMALL MERCANTILE AND OFFICE BUILDINGS



THE LATE GEORGE BROWNE POST, F. A. I. A.

BORN DECEMBER 15, 1837 — DIED, NOVEMBER 28, 1913

George Browne Post.

AN APPRECIATION OF THE MAN AND HIS WORK BY MONTGOMERY SCHUYLER.

GEORGE BROWNE POST, N.A., LL.D., architect, born in New York City, December 15, 1837, son of Joel B. and Abby M. Post. Educated in Churchill's Military School at Sing Sing, N. Y. Graduated as civil engineer from the scientific school of the New York University in the class of 1858. Studied architecture with the late Richard M. Hunt in the years 1858, 1859, 1860. Formed a partnership with a fellow student, Charles D. Gambrill, for the practice of architecture in 1860. Served for four months in 1862, and four months in 1863, as captain in the Twenty-second Regiment. Served as Volunteer Aide on the staff of General Burnside commanding the Army of the Potomac in 1862 at the first battle of Fredericksburg. Was promoted to Major, Lieutenant-Colonel, and Colonel of the Twenty-second Regiment, N.G.N.Y. After the war he resumed his professional career. The partnership with Mr. Gambrill was dissolved. In 1905 the firm of Geo. B. Post and Sons was formed consisting of Messrs Geo. B. Post, Wm. S. Post, and J. Otis Post. Married in 1863 to Miss Alice M., daughter of William W. Stone. Children — Geo. B. Jr., William S., A. Wright, James Otis, and Alice W., now Mrs. Arthur Turnbull. Member of the Architectural League of New York; president from 1893 to 1897, inclusive. Elected Honorary Life Member in 1912. Fellow of the American Institute of Architects; president from 1895 to 1898, inclusive. Member of the New York Chapter, American Institute of Architects; president in 1904. Member of the Fine Arts Federation of New York; president in 1898. Charter member of the National Arts Club; president from 1898 to 1905. Member of the National Institute of Arts and Letters. Member of the American Academy of Arts and Letters. Member of the Tenement House Commission, known as the "Gilder Commission" appointed by the Legislature of New York. Member of the Province of Quebec Association of Architects. Member of Expert Committee to appoint a sculptor and select a design for the Lafayette Monument erected in the courtyard of the Louvre in Paris. Decorated a Chevalier de la Legion d'Honneur in 1901. Awarded the Gold Medal of the American Institute of Architects, 1910. Member of the Municipal Art Society; director 1901 to 1909. Appointed by the Secretary of State, a delegate to the World's Congress of Architects in London, to represent the American Institute at large. Appointed by the Secretary of Agriculture in 1906 a collaborator of the Forest Service of the United States Department of Agriculture. Appointed Honorary Corresponding Member of the Royal Institute of British Architects in 1907. Member of the National Advisory Board on Fuels and Structural Materials, appointed by President Roosevelt in 1906. Reappointed in 1907, 1908, and 1909. Elected an Associate of the National Academy of Design in 1907. Elected an Academician of the National Academy of Design in 1908. Honorary Degree of Doctor of Laws conferred by Columbia University in 1908. Member Committee of Patronage to the Eighth International Congress of Architects, 1907. Appointed in 1908 a member of the Permanent Committee of the International Congress of Architects. Appointed by President Roosevelt in 1909 a member of the Bureau of Fine Arts. Member of the National Sculptor Society. A member of the Council in 1904. Appointed by the Governor of the State of New York in 1902 a member of the Board of Commissions of the St. Louis Exposition. Member of the New York Academy of Sciences; American Geographical Society; American Society of Civil Engineers; Chamber of Commerce, New York; National Society of Craftsmen; Public Art League; Archaeological Society of America; National Geographical Society; Metropolitan Museum of Art; New Jersey State Chamber of Commerce; Century Association; Union Club; Cosmos Club, Washington; and charter member of the Lawyers' Club.

A GREAT architect in the sense of a great architectural artist nobody would think of calling the late George B. Post. He was really a great "planner." Forty years ago, or a little more, the first "elevator buildings" were in course of construction in New York. One of them was the old Tribune Building, of which Richard Morris Hunt was the architect, the other the Western Union Building, of which George B. Post was the architect. In these two buildings the pupil evidently surpassed his master. Because, in the original Tribune Building, Mr. Hunt, confronted with a novel problem, was fain to resort to a group of stories, instead of a single story, as the new architectural unit, whereas Mr. Post, in his first essay, hit upon the arrangement of a triple division into base, shaft, and capital, following Aristotle's requirement of "a beginning, a middle, and an end" for all works of art. The arrangement really imposed itself upon all subsequent architects, not only of the early stage in which the walls were real walls, but equally of the subsequent stage, when the steel frame construction had promoted the work of the passenger elevator and raised the practicable altitude of commercial buildings "to heights unknown."

With the modern skeleton skyscraper George Post had comparatively little to do. But in the era of what may be called the "transitional" buildings, in which the passenger elevator was the only new factor, the skeleton construction not yet having arrived, he had more to do than anybody else. During the decade 1880-90 he was by far the most employed and successful designer of commercial buildings in New York. It is really an impressive list. The Produce Exchange, the Cotton Exchange, the Mortimer Building, the Mills Building, the Post Building, the Pulitzer Building, the reconstruction of the Equitable Building; all these are examples of his personal force. And his preeminence was deserved in those years by reason of his strong practicality and honest meeting of the requirements of his clients, if not by reason of more strictly artistic qualities.

There was a succession of buildings in Richardsonian Romanesque that should not be passed over in recounting Mr. Post's activities. They showed a constant advance, or nearly so. The building on Park Row originally designed for the New York *Times* was the first, the Union Trust in Broadway, opposite Trinity Church, was the second, the building of the Prudential Insurance Company over in Newark was the third. Upon all these the big thumbmark of George B. Post is plain. Really, he has scored his mark deeper in the downtown business quarter than has any other architect, and this by dint of the large human qualities that were his. In this "Romanesque" series no discerning observer can fail to note the enormous advance from the north front of the old Times Building to the front of the Union Trust, doubtless the most successful of its author's efforts in that line.

And you may observe the same architect's autograph in works with the detail of which he may have had little to do, for example, in the romantic and picturesque architecture of the City College, with the bigness and simplicity of the layout of which he evidently had everything to do. Similarly with the bigness and simplicity of the architecture of the new Stock Exchange he had everything to do. And when you come to think of it, that was a fine conception, in reconverting the old classic portico into what it originally was, the actual architecture of the building. It is perhaps the crowning example of its author's genius for simplification. It is true that he missed a great chance by not letting the attic show frankly as an attic, and turning his sculptors loose on that, instead of complicating it with an irrelevant and unmeaning classical pediment, in which the sculptors were unduly hampered. All the same, there was an notable bigness about Mr. Post's work, and his confrères should delight to honor his memory.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

THE illustrations of the waiting room of the Rochester Railway Station in this number show in a marked degree the vast possibilities of decoration that are latent in many materials that are commonly termed constructive, and rarely considered with much thought of their own natural beauty. This satisfying expression of architecture in terms of simple burnt clay materials also points to a means for better and more artistic treatment of the many practical and commercial types of buildings which are all too seldom associated with architecture in the public mind.

The use of some of the new structural materials indicates at least that they are influencing new and distinct architectural formulæ appropriate to the materials. This is particularly noticeable in some of the newer warehouses and automobile service buildings, wherein a distinctive type has been evolved through study of the characteristics of the materials commonly used in their construction. But what has been done is only a forerunner of what can be accomplished, and only indicates the further possibilities that this field of endeavor offers. It is encouraging to note that an increasing number of representative architects are taking up the design of these utilitarian buildings with enthusiasm and vigor and their efforts cannot fail to be productive of much that is rational and dignified architecture.

Architects, moreover, are being more frequently called upon, in association with engineers, to effect practical solutions of big problems where the matter of expense is a vital factor in the conditions, and where the expenditures for architectural effects come under the cold scrutiny of the engineering fraternity. To the architect working under such circumstances, an appreciation of the natural beauty of structural materials, together with a sense of their appropriate use, is indeed a valuable asset. The possession of this knowledge will have a controlling influence on his designs, which will make them readily meet the most exacting requirements of modern engineering, and at the same time fully endow them with the distinction of being real vital architecture in the truest sense of the word.

Under modern conditions of building, it is more than imperative that there should be perfect harmony between the engineering and architectural design. Power of design and knowledge of construction should go hand in hand; the architect should have the necessary technical knowledge of building to realize in terms of sound construction the results of his imagination. Where the engineer stops at construction, the architect, as an artist, sees further possibilities of beautiful form; but he should possess the technical knowledge to see wherein his design must be dependent upon construction, and to realize that architecture to be real must be more than applied decoration — it must be part and parcel of the structure.

THE following is one of a series of short and pertinent discussions of little difficulties an architect experiences in practice, published as "Modern Fables" in *The Builder*, and not without point to the American architect.

"John Thorpe was an architect — young and very much in earnest — who, while not neglecting to render the account for his fees when they fell due or refusing to accept payment for his services when tendered, yet, on the whole, felt more interest in securing credit and reputation from his work than in the monetary results which flowed (or dribbled) therefrom.

"John Thorpe had a client who desired a dwelling-house built, and had heard that an architect was a serviceable intermediary between owner and builder — if you kept him in check and let him understand that you employ him to carry out *your* ideas.

"John Thorpe's client, as is the wont of clients, expressed himself in this wise: — 'Now, one thing I must have is good high rooms — about 13 ft. at least.'

"John Thorpe knew right well that a house costing £650, with stories 13 feet high, was an artistic impossibility. He conceived it his duty to tell his client plainly that this was so, so his client left him and bought a house from a builder, whereof the rooms were but 9 ft. high.

"Robert Smithson was also an architect — still young, though not so young as Thorpe. He also had a client (same sort), who also expressed himself in similar wise. Now, Smithson also knew right well that rooms 13 ft. high were, in the circumstances, an artistic impossibility, but he was crafty in his generation, and, saying nothing, yet proceeded with his sketch designs, making his rooms but 8 feet high. In due course these designs were received by the client, who liked them pretty well, but as to the lowness thereof he was wroth, and descended upon the architect (and his wife also with him) to the intent that they might upbraid him and obtain his promise of reform.

"But Smithson, being crafty and making no mention of artistic impossibilities, set forth reasons as follows:

"'You approve,' said he, 'of the size and disposition of the rooms. Consider now that with stories of the height I show the cubic contents of the house lie within the figure which you desire to expend. But be assured greater height means decreased size or increased cost. Take, therefore, thy choice, for a quart will not go into a pint pot.'

"Then his client was given pause, for with the size of the rooms he had been greatly pleased. Perceiving now his advantage, the architect next mentioned that stairs fewer by nine would be needed in the ascent from floor to floor. At this his client's wife perceived light which had hitherto been denied her. Following this the architect (a crafty man) spoke confusingly, and in a manner implying knowledge hid from the common herd, of warming and ventilation, how easy in low and how wasteful and difficult in high rooms, and all his reasoning and exposition was good and sound. And in the end his client agreed that the stories should be 8 ft. 6 in. (as Smithson had from the first intended), and that the cost might be enlarged £50, and he departed satisfied, as also his wife.

"Observe now that no mention of æsthetic motives did enter their discussion, yet was the æsthetic object achieved."

Moral. — Levers be of three classes. Apply thy power with whichsoever fulcrum will most readily move the weight thou hast to shift.

COMPETITION PROGRAM—A BRICK HOUSE—Page XXII

THE BRICKBVILDER

AN ARCHITECTVRAL MONTHLY

VOL. 22

DECEMBER
1913

NO. 12

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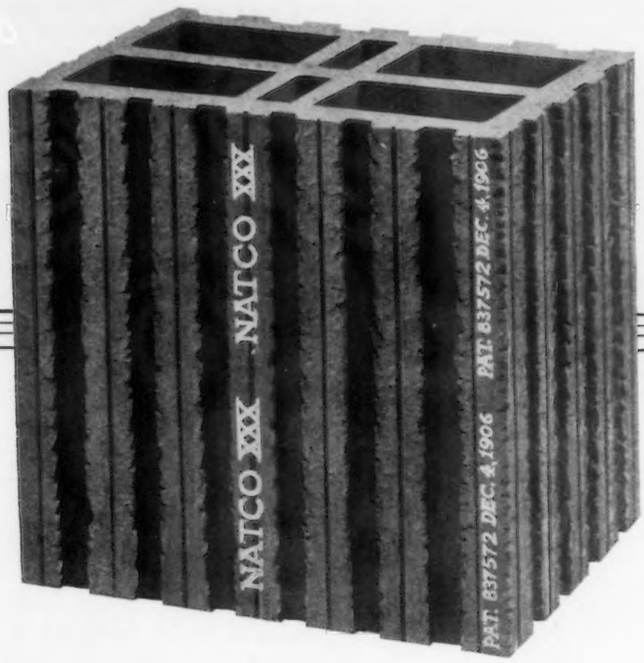

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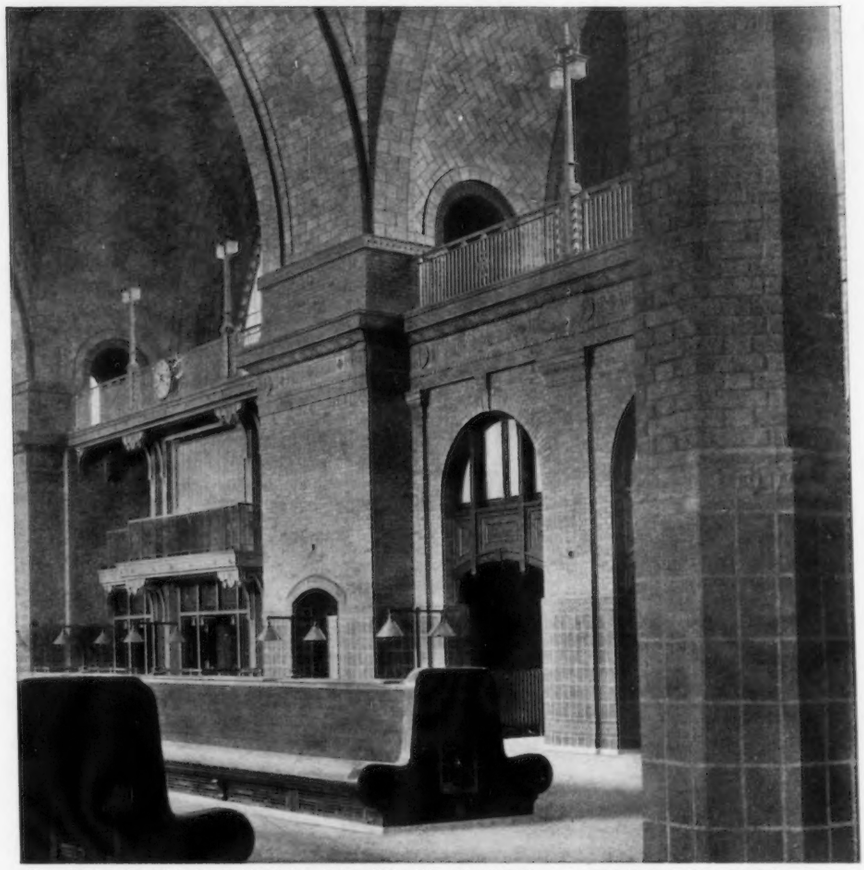

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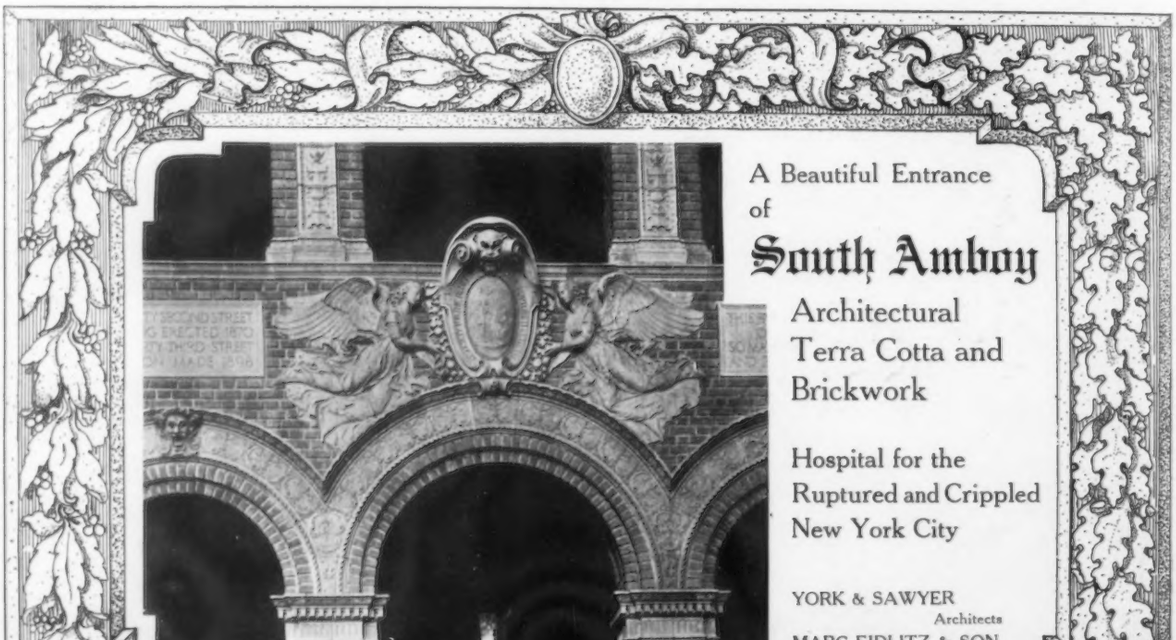

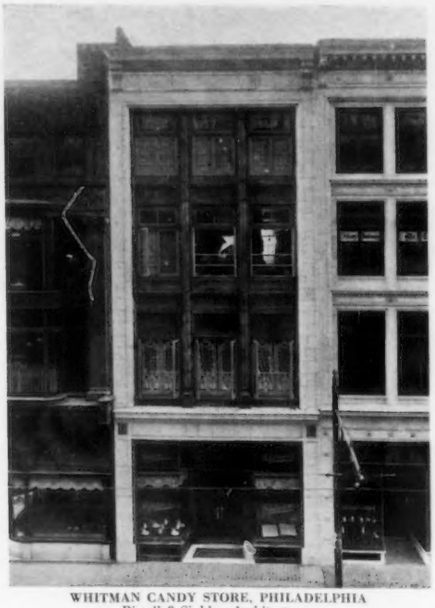

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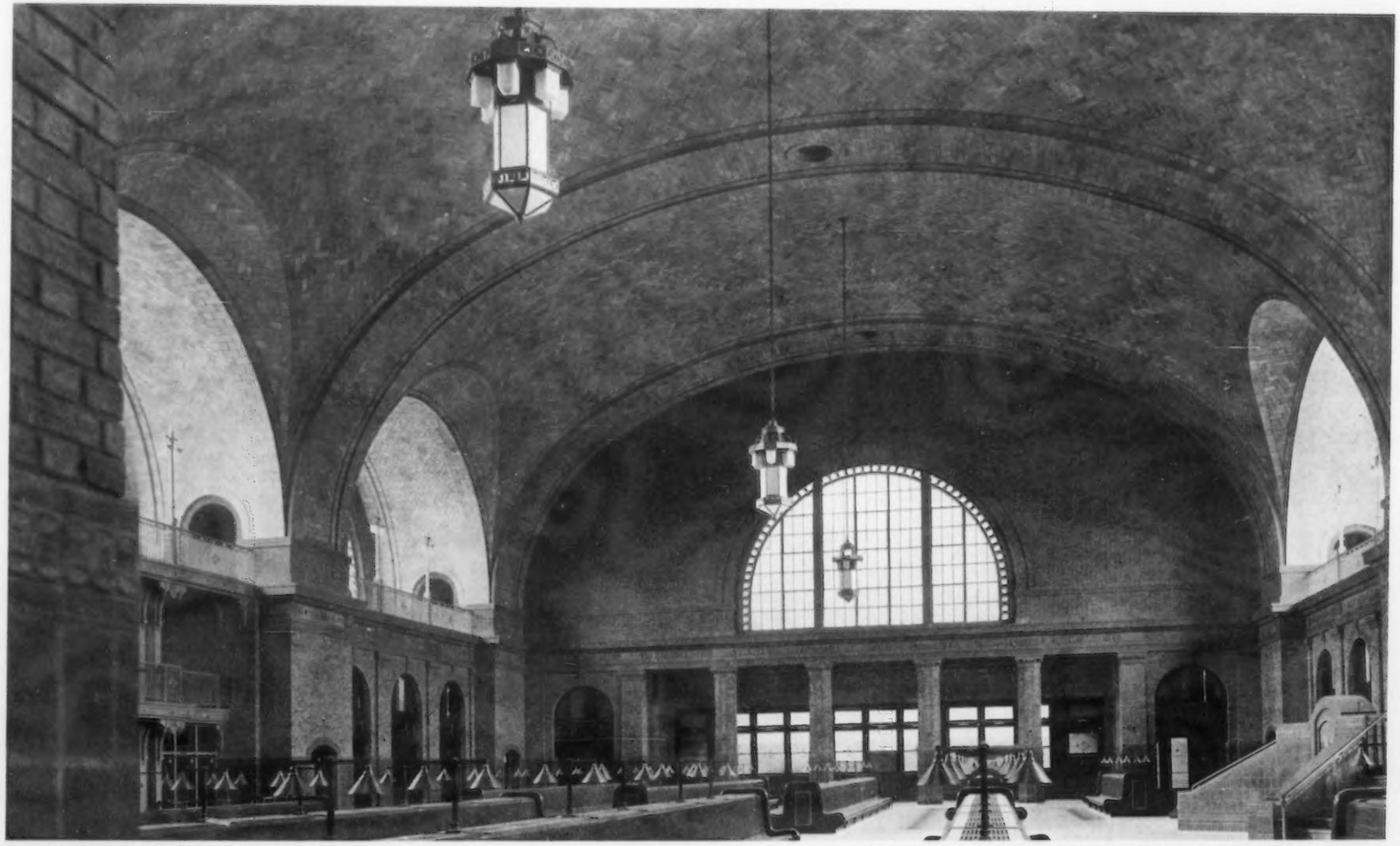

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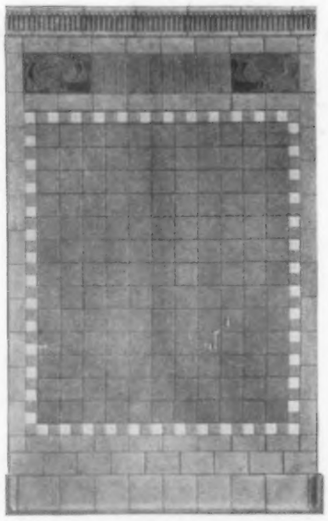

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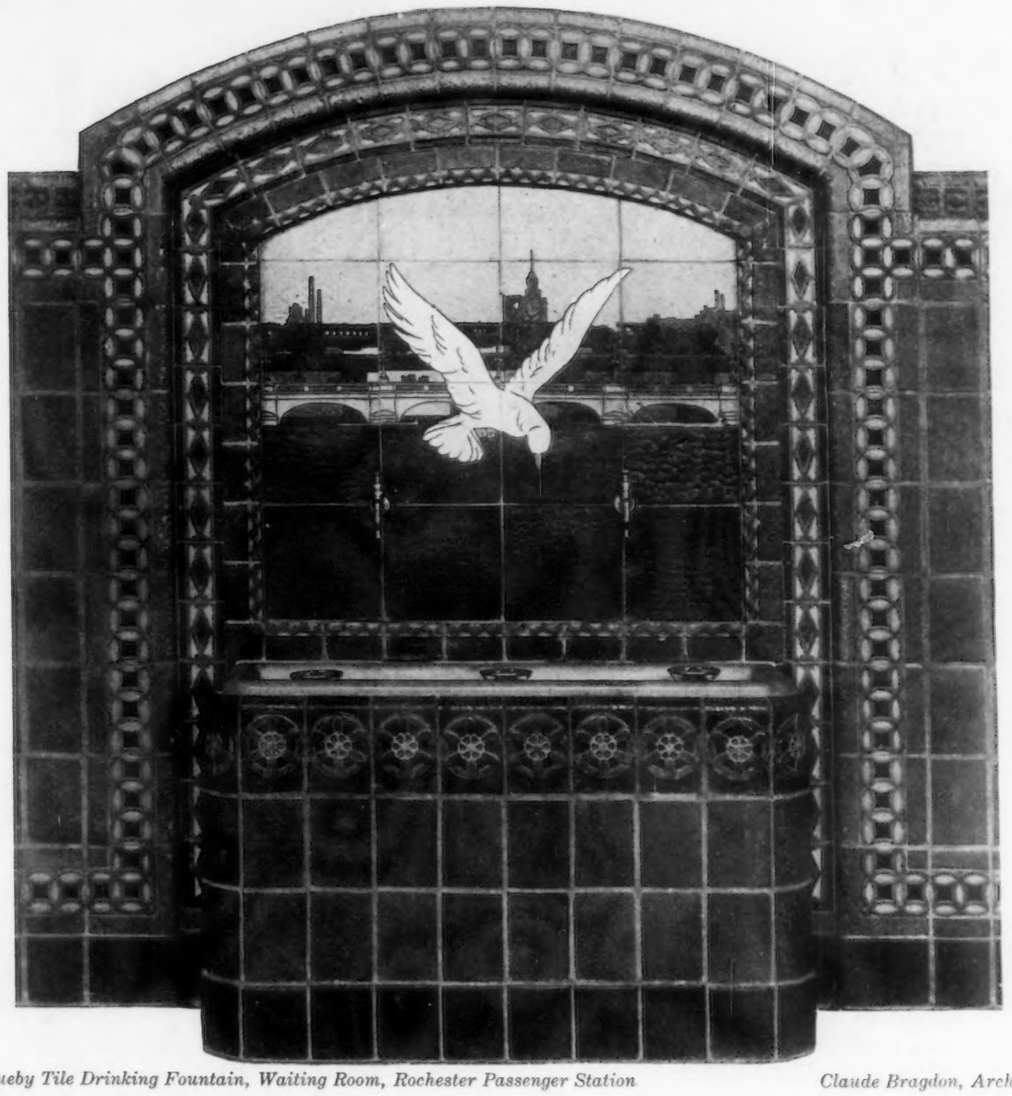

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CALDER APARTMENTS, CONEY ISLAND AVENUE, BROOKLYN, N. Y.
Cohn Bros., Architects

Rug Texture Bricks come in shades of Buff, Tan, Brown, Old Rose, Green, Purple and Red and can be served in assorted or mingled colors.

Our "Pontiac Pot Pourri" is a combination of Tan, Brown, Old Rose, Green and Purple Shades.

Hocking Valley Products Company

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Auditorium, Vassar College, Poughkeepsie, N. Y.
McKim, Mead & White, Archts.

Our selected No. 1 hard burned red brick were used for the facing of the entire elevations of this building.

The same brick were furnished by us for the University of Pennsylvania Buildings to the extent of over four millions in their

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ROUGH TEXTURE
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IN RED, BUFF, GRAY, MOTTLED, WHITE, ETC.

Enameled Brick, Roofing Tiles, Paving Clinkers, Etc.

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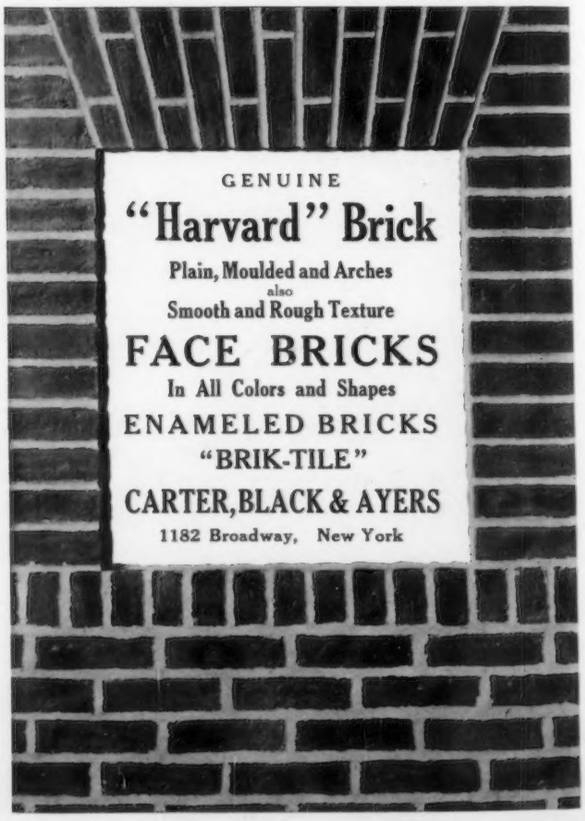

Residence, Indianola Heights,
Columbus, Ohio.

C. L. Inscho
Architect.

Buildings such as the above, with façades of

Claycraft Mingled SHADES

are the direct cause of brick coming into its own in this country.

This residence with its sixteen varicolored shades ranging from a coral to a deep wine in the reds, from a tan to a rich dark saffron in the browns, with an occasional metallic gun metal; harmoniously assembled; has been pronounced by an eminent architect as being the last word in artistic and tasty brick treatment.

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WIRE CUT Ivory and Gray in Standards only
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Hy-tex Brick

gives the architect the utmost of these brick qualities. Our facilities for manufacture, distribution and prompt service are not and cannot be equaled by any other manufacturer.

Hy-tex is the only name that stands for *quality* in every kind, color and texture known to brick-burning.

NOTE—To those of the architectural profession interested in the competition for a $7500 residence faced with Hy-tex Brick, announced in this issue of The Brickbuilder, we shall be glad to send Hy-tex literature on request. Simply ask any of our offices for a "Competition Packet."

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Hy-tex Hy-tex Hy-tex Hy-tex Hy-tex Hy-tex

Competition for a Brick House to Cost $7,500

TO BE FACED WITH HY-TEX BRICK

First Prize, $500
Second Prize, $250

Mentions

Third Prize, $150
Fourth Prize, $100

Competition Closes February 10, 1914

PROGRAM

THE problem is a detached house, to be faced with Hy-Tex brick at a cost not to exceed $7,500. The style of the house and plan arrangement is left entirely to the designer; it should, however, provide the usual accommodations and conveniences for a small American family of moderate means. It is especially desired that the design should show generous appreciation of good brickwork, and in this connection originality in the treatment of the facing possibilities of the material is courted. The location may be assumed in a town, small city, or suburb of a large city. Shape and size of lot may be established arbitrarily by the designer; the land is level.

The cost of the house complete, exclusive of the land, must be figured at 22 cents per cubic foot. This price must include cost of excavation, plumbing, heating, electric wiring, hardware and painting, in addition to the other costs of materials and construction. Measurements must be taken from the outside face of exterior walls and from the level of the basement floor to the average height of all roofs, measured to a point two-thirds of the distance from the highest cornice to the ridge. Porches, verandas, and other additions are to be figured separately at one-fourth (twenty-five per cent) of their total cubage, provided they project beyond the bearing walls, and at one hundred per cent if provided for within the bearing walls. All cubage and other dimensions will be checked before the drawings are submitted to the jury. Those designs which exceed the limit of cost or which do not meet the other requirements of the program will not be considered.

The jury will give consideration first, to the fitness of the design, to the material employed esthetically considered; secondly, to the excellence of plan.

On the drawing, in a space measuring 6 by 5 inches enclosed in border line, is to be given, at a size which will permit of three-quarters reduction, the cubage of the house multiplied by the cost per cubic foot, and the various items, enumerated with costs, which go to make up the total cost of the house. An additional value will be given to the work if the style and color of brick chosen are indicated on the drawing either by a key or a series of notes printed on the sheet.

This competition is being given for two distinct purposes. First: to encourage THE BRICKBUILDER in its effort to create a wholesome brick architecture in America and to give to architects and architectural draftsmen of the country an opportunity to measure their skill with one another. Second: to encourage a greater and more extended use of Hy-tex Brick in their various colors, textures, and forms. These brick are manufactured by the Hydraulic-Press Brick Company, the patrons of this competition and the contestants will be helped by a study of the catalogues and booklets issued by this company, which, upon application to the nearest office, will be sent to any architect desiring them. (See addresses on preceding page.)

CONSTRUCTION

Methods usually employed in the construction of brick walls as to bonding, anchorage, etc. may be followed, the exterior walls to be wholly faced with brick.

DRAWING REQUIRED. (There is to be but one.)

On a sheet of white paper measuring exactly 26 by 20 inches with plain black border lines drawn one inch from edges, giving a space within the border lines of 24 by 18 inches, give a pen and ink perspective of the house, without wash or color, drawn at a scale of 4 feet to the inch; plans of first and second floors at a scale of 8 feet to the inch; a detail showing bond or other points of interest on exterior walls; enough detail sketches, including treatment of main entrance, to fill out sheet. In connection with the plan of the first floor show as much of the arrangement of the lot in the immediate vicinity of the house as space will permit. The plans are to be blocked in solid. Height of floors to be given on section. A graphic scale must accompany the plans.

Very thin paper, mounted paper, or cardboard is prohibited.

The drawing is to be signed by a *nom de plume* or device, and accompanied by a sealed envelope, bearing the *nom de plume* and containing the true name and address of the contestant within.

The drawing is to be delivered flat, or rolled (packed so as to prevent creasing or crushing), at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before February 10, 1914.

Drawings submitted in this competition are at owner's risk from time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The designs will be judged by three or five members of the architectural profession representing different sections of the country.

The prize drawings are to become the property of THE BRICKBUILDER and the right is reserved by THE BRICKBUILDER to publish or exhibit any or all of the others. The full name and address of the designer will be given in connection with each design published. Those who wish their drawings returned, except the prize drawings, may have them by enclosing, in the sealed envelopes containing their names, ten cents in stamps.

Designs submitted in this competition will be returned direct from the office of THE BRICKBUILDER to the contestants.

For the design placed first there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

This competition is open to all architects and architectural draftsmen.

The prize and mention drawings will be published in THE BRICKBUILDER.

This competition is conducted under the patronage of the Hydraulic-Press Brick Company.

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No Maintenance Cost

AN investigation into net roofing costs will promptly disclose the superiority of Barrett Specification Roofs. Their first cost is lower than that of any other permanent roof, and, as they require no painting or other care for upwards of twenty years, their maintenance cost is nil.

The Bush Terminal Company, with a total roof area of more than 70 acres (3,100,000 square feet) on their 181 buildings in Brooklyn, illustrated below, studied the subject of roofing costs and adopted this type of roofs. The Vice-President of the Bush Terminal Company writes:

> We use this kind of roofing because our experience has shown it to be the best and cheapest. Our analysis of first cost of application and cost of maintenance entitles us to speak with some measure of authority.

The roofing contractor states that the expense for maintenance of this entire roof area has been less than $10 and estimates that if metal or ready-made roofings had been used it would have been impossible to keep the buildings free from leaks, and that the painting bill alone up to date would probably have amounted to at least $50,000.

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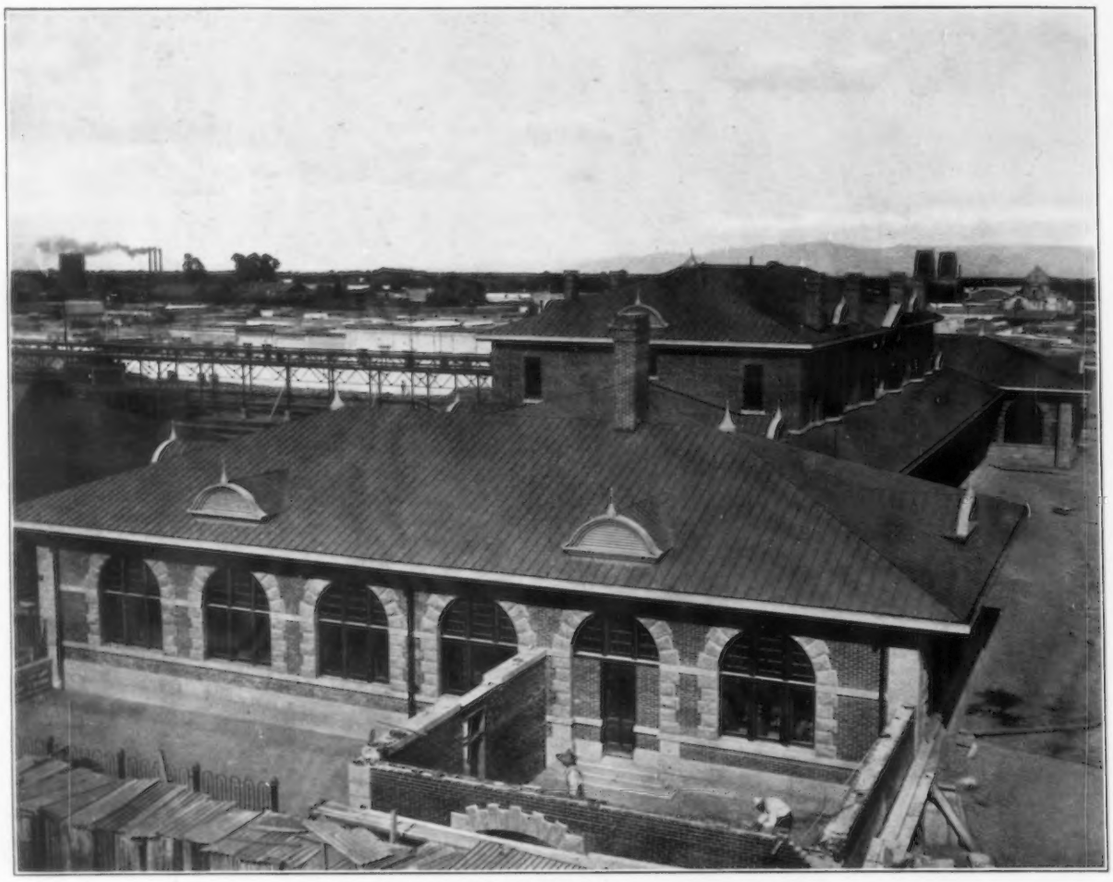

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Roofed with 28,875 sq. ft. of Target-and-Arrow roofing tin

Architect, E. P. DeWolf, Chief Engineer of Construction, National Railways of Mexico
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The Right Kind of Paint

Dutch Boy White Lead

ABOVE is illustrated a Colonial doorway that is more than a mere means of getting in and out of the house. The use of the right color and the right kind of paint has made this doorway, beautiful in its simplicity, a prominent part of the whole house.

Imagine a paint that peeled and cracked on this doorway. All its beauty, charm and invitingness lost by ugly paint splotches. Nothing but an elastic, durable white lead paint which would stay smooth would do—*just the reason Dutch Boy white lead was used.*

This doorway is one instance where a straight white lead and linseed oil paint was the most appropriate to secure the most pleasing and tasteful result, but in using pure white lead the decorator is not limited to white paint. White lead may be tinted any color or shade; any texture or finish desired may be obtained and best results, inside or outside, at the least cost per year are guaranteed if Dutch Boy white lead and Dutch Boy linseed oil are used.

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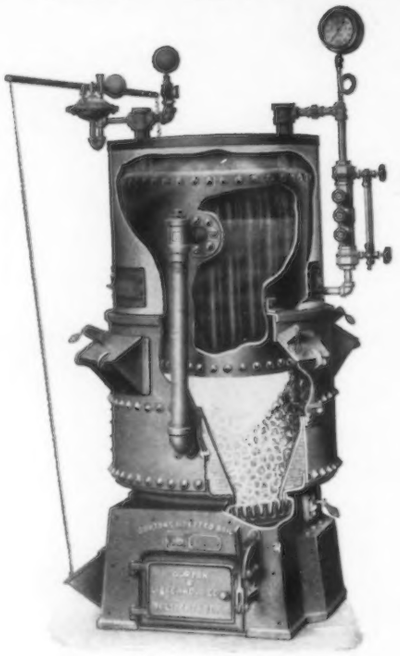

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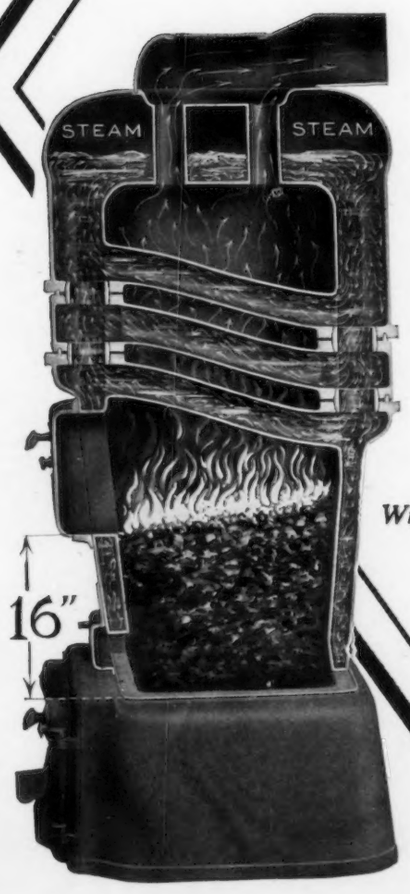

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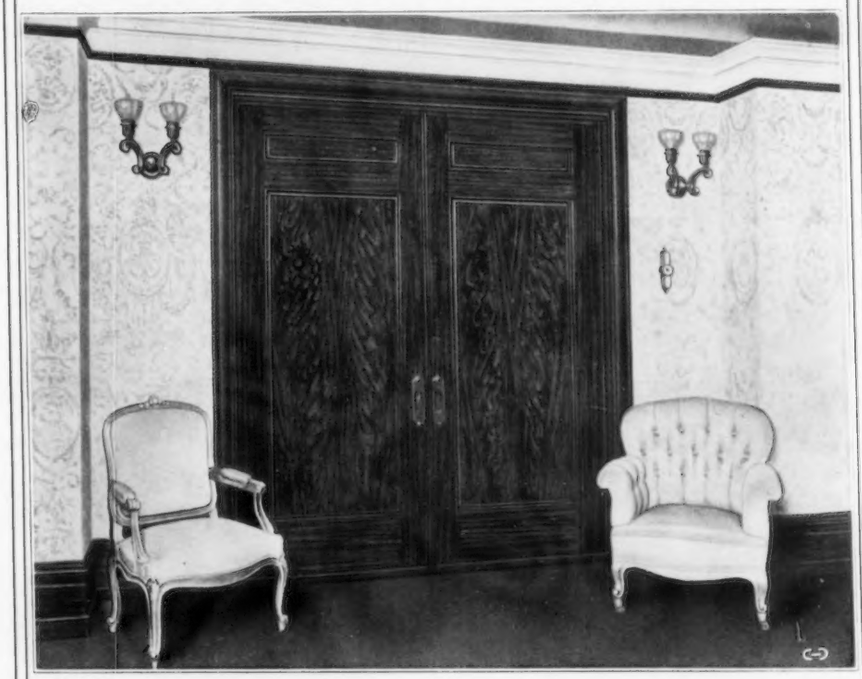

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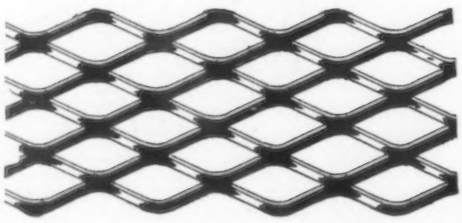

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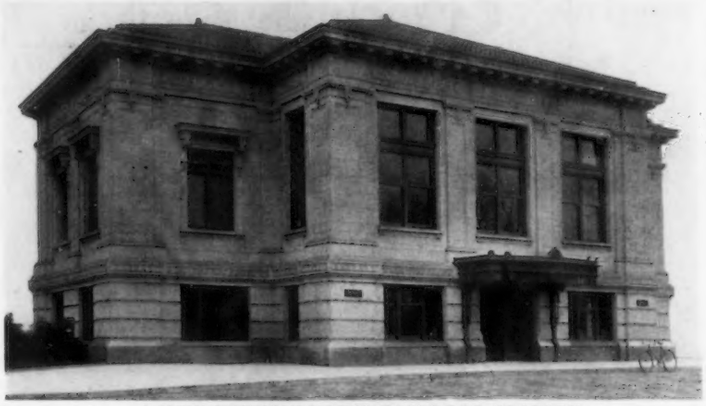

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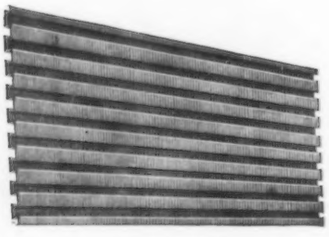

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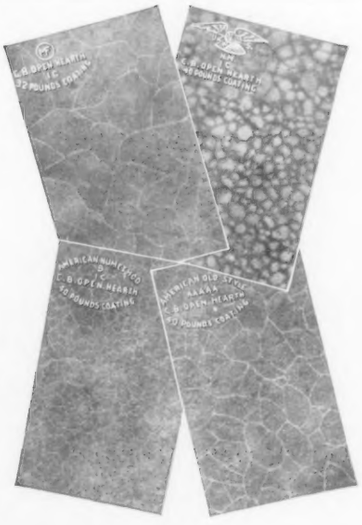

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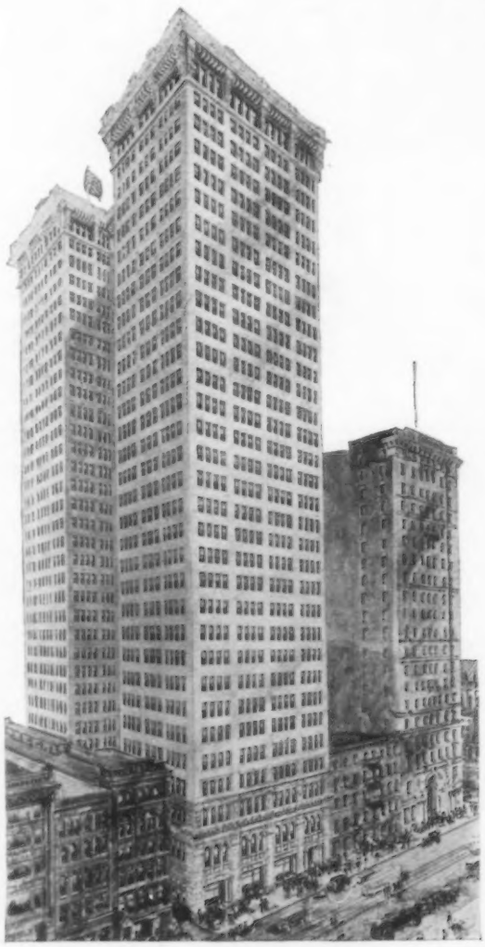

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